THE PLANT DISEASE REPORTER

Issued By

**PLANT DISEASE EPIDEMICS
and
IDENTIFICATION SECTION**

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

SOME NEW AND IMPORTANT PLANT DISEASE OCCURRENCES AND DEVELOPMENTS IN THE UNITED STATES IN 1955

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Plant Disease Epidemics and Identification Section serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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Horticultural Crops Research Branch   Plant Industry Station, Beltsville, Maryland

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Compiled by Nellie W. Nance

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As in former years, this is a summary of important diseases and developments compiled for the most part from reports to the Plant Disease Epidemics and Identification Section and from articles in Phytopathology. Reports listed in the tables are not usually noted again in the text.

There have been many recent outstanding advancements in the development of plant disease control by antibiotics, by use of antagonistic organisms, disease control in general, and the control of specific diseases caused by actinomycetes and fungi. It has been stated that more than 2, 000, 000 pounds of chemicals, costing $35,000, 000, are used annualy in the United States in the plant control program.

Since weather as related to plant disease development is such an important factor, a weather summary for the year follows.

WEATHER OF 1955. General Summary. - - Temperatures for 1955 averaged unusally low in the Far West and the Florida Peninsula, well above normal in the Great Lakes region and Northeast, and near normal elsewhere. Precipitation totals were far in excess of the usual amounts in the Pacific States, the northern Rocky Mountain region, and parts of eastern New York and southern New England, but were greatly deficient in Iowa, Missouri, and the central and lower Great Plains.

The seasons were featured by an unusually cool spring and summer in the Northwest, a spring drought in the western portions of the lower Great Plains, a hot, humid summer in the northeastern quarter of the Nation, and a fall drought in the Texas and Oklahoma Panhandles and adjoining areas.

Other highlights of short duration, and more or less localized, included August and October floods in southern New England and adjoining areas. December floods in California and Oregon, a March freeze in the Southeast, a November freeze in the Northwest, Californa's heat wave and forest fires in September, Hurricane Ione which struck coastal areas of North Carolina and Virginia a damaging blow in September, and a July thundershower which set a new world's record for rainfall intensity at Jefferson, Iowa.

The year's weather, from an agricultural standpoint, was very favorable as reflected in total crop production near the record of 1948. This satisfactory result was due in great measure to timely and well distributed rainfall which prevented serious drought from developing in large areas during the critical growing season as it did in the three previous years. Nevertheless, drought and wind erosion during the spring and early summer ruined or damaged millions of acres of winter wheat in the lower Great Plains, and heat and drought during July and August sharply cut the corn crop in the western portion of the Corn Belt and grain sorghums in the central Great Plains.

January and February passed without any extraordinary weather events, although cold, blustery weather prevailed in the western half of the Nation during most of the latter month and the northern Great Plains had heavy snows and blizzards from the 18th to the 20th.

March, more than living up to its reputation as a month of extremes, started off with floods in the Ohio River which caused damage estimated at several millions, but unleashed its most violent weather during the last decade when blizzards swept the Great Plains as far south as Oklahoma and severe winds, tornadoes, glaze, heavy snow, and record cold caused damage in other sections totaling millions of dollars. The greatest damage, estimated at $50, 000, 000, resulted from the severe cold spell from the 26th to the 29th in the southern Great Plains and South including the lower Mississippi and Ohio Valleys. Temperatures which ranged from a record March low of -30° for Helena, Mont., on the 25th to a late season low of 30° for New Orleans, La., on the 27th caught many crops in an advanced stage of development due to record-breaking warm weather earlier in the month. Tung nuts and fruits, particularly peaches, which had reached the blossom stage where virtually all killed in the

Gulf and South Atlantic States, and peaches were severely damaged in lower elevations northward to southern Illinois and southeastern Virginia.

During April and May occasional strong winds continued to whip up severe duststorms in the Great Plains and Southwest. Of greater importance, however, was the combination of generous rainfall and above-normal temperatures which furnished the basis for an excellent crop outlook in the eastern agricultural half of the Nation.

June was an unusually cool and pleasant month over virtually the entire Nation. During July and August the weather east of the Rocky Mountains was characterized by a prolonged and persistent heat wave which was very unusual in that it was unaccompanied by any record-high temperatures or drought. August was also notable for hurricanes Connie and Diane which together dumped over 20 inches of rain in parts of the Northeast, resulting in one of the worst weather-caused disasters in the history of the United States when streams overflowed in southern New England, New Jersey, and parts of New York, and Pennsylvania resulting in the death of about 200 persons and property losses estimated in excess of three-quarters of a billion dollars. Heavy rainfall during July and August occurred in Arizona after the beginning of the summer thunderstorm season on July 10, and beneficial amounts fell in surrounding areas.

September weather was highlighted by a record heat wave in the Far West during the first 12 days. This heat wave was responsible for an all-time high temperature of 110^{o} in downtown Los Angeles, Calif., on the 1st, and it created an extremely high fire hazard in California where over 400 forest fires caused unprecedented losses. Hurricane Ione headlined the weather news on the 19th when its center moved across the north coastal area of North Carolina, causing damage in that state estimated at $88, 000, 000.

While southern New England was still recovering from the disastrous floods in August, another storm on October 14, 15, and 16 again brought more than 10 inches of rain resulting in major floods which caused more than 30 deaths and property losses estimated at many millions of dollars.

September and October, the first 2 fall months, were characterized by mild temperatures and ample periods of dry weather favorable for fall harvesting over most of the country. Crops reached maturity before the first freezes even though they came about 2 weeks early in parts of the South.

Unusually persistent, below-normal temperatures gave the Nation one of its coldest Novembers on record. In the Pacific Northwest record breaking cold was responsible for heavy agricultural losses. Cold weather continued until the middle of December when a change to milder temperatures occurred.

The change began in the Far West where it was ushered in with heavy rains. In northern California over 30 inches of rain in a 10-day period resulted in floods which were responsible for more than 50 deaths and preliminary damage estimates in excess of $100, 000, 000. Milder weather reached eastern sections of the Nation around Christmastime as many stations in the South and Southeast reported their highest temperatures on record for December 25. As the year ended, drought was developing in the Plains west of a line from Texas to Illinois and along the Eastern Seaboard.

PRECIPITATION. --Precipitation for 1955 was above normal in the Pacific States (except the southern third of California), along the Canadian Border from Washington to northern Wisconsin, western portions of Nebraska and Oklahoma, central Colorado, in a belt extending from northern Mississippi through most of Tennessee, Kentucky, and Indiana and parts of Illinois and Ohio, and another belt in the East extending from coastal areas of the Carolinas northward through eastern Virginia, Maryland, most of New York and New Jersey, and western and southern portions of New England. Elsewhere totals were below normal. Less than 75 percent of the normal amounts fell in southern Missouri, parts of the southern Rockies, and in a belt extending from northern Iowa and eastern Nebraska southward through the western portion of the lower Great Plains and including much of southern and eastern Texas.

The most serious drought conditions developed in western portions of Texas, Oklahoma, and Kansas, and eastern portions of New Mexico and Colorado during the spring months, and in northeastern New Mexico, southeastern Colorado, southwestern Kansas, and the northern portion of the Texas Panhandle in the fall. Drought threatened in several other areas during the year, but owing to timely rains usually failed to reach serious proportions.

A few local rainfalls of high intensity were of more than usual interest. The most notable was that recorded in Jefferson, Iowa, on July 10 when 0.69 inch of rain fell in one minute, setting a new world's record for rainfall intensity. On the same date an unusually high rate of rainfall at Sioux City, Iowa, caused damage estimated at $1,500,000. A 1-inch rainfall in 5 minutes set a new record at New Orleans, La., on February 5. A million dollar flash flood occurred in Little Rock, Ark., on May 26 when 3 inches fell in an hour, 4.60 inches in 2 hours, and 7.70 inches in 6 hours, all new records there. Las Vegas, Nev., had a $1,500,000 flash flood on June 13.

SNOWFALL. --Snowfall for 1955 in the Cascade and Sierra Nevada Mountains and the central and northern Rocky Mountains was generally above normal, with many stations meassuring unusally heavy annual falls. The most outstanding total was 903 inches measured at Paradise Ranger Station, Wash., which is 19 inches more than the 884-inches record seasonal fall at Tamarack, Calif., in 1906-07. Other large falls included Crater Lake, Oreg., 640 inches; Twin Lakes, Calif., 502; Stibnite, Idaho, 364; Kings Hill, Mont., 303; Snake River, Wyo., 285; Wolf Creek Pass, Colo., 435; and Silver Lake, Utah, 463 inches.

In the central interior yearly falls ranged from an inch or two in the northern portions of the southern states up to 224 inches at Houghton, Mich. In southern areas from one-half to nearly all the snowfall occurred in January.

In the Appalachian region falls ranged from about 3 inches in central Georgia up to 259 inches at Boonville, N. Y. On January 23 a little snow fell in some sections of northern Florida. During another storm in this State in March one inch fell at Marianna (greatest total for year) and flurries were reported as far south as Polk County.

TEMPERATURE. --Temperatures for 1955 averaged below normal in the Florida Peninsula, the northern Great Plains, and west of the Continental Divide, and above elsewhere. Anomalies ranged from 2° above normal in northern Michigan to 3° or more below in the northern Rockies and Pacific Northwest. Extreme readings for the year, ranging from 123° at Greenland Ranch, Calif., on June 7 to -48° at West Yellowstone, Mont., on December 15, were well within the limits of former records.

Relatively cool weather was unusally persistent in the Far West, particularly in central and northern coastal sections where only two pronounced warm spells occurred - these in early September and late December - and monthly averages showed minus departures for eleven of the twelve months. For Washington the months of March, April, and November were the coldest on record and the average for May equaled the former record. West of the great Lakes November was the coldest since 1896, and a cold snap about midmonth caused severe crop damage in Oregon and Washington with losses in the latter state estimated at $11,000,000.

In the Great Plains temperatures showed the usual fluctuations during the year, with February, June, and November decidedly colder than normal while the remaining months were mostly on the warm side. From the Mississippi Valley eastward, January, November, and December were decidedly cold, as were also June and October except in extreme northern areas. July, August, and the latter part of June were unusually warm and humid in middle and northern sections of this area. Also a warm spell in the latter half of December brought the warmest Christmas day on record to many southern stations. Other than the March freeze already mentioned, freezes also caused light to locally heavy crop damage in Florida on January 14-15, 30-31 and on February 12-13.

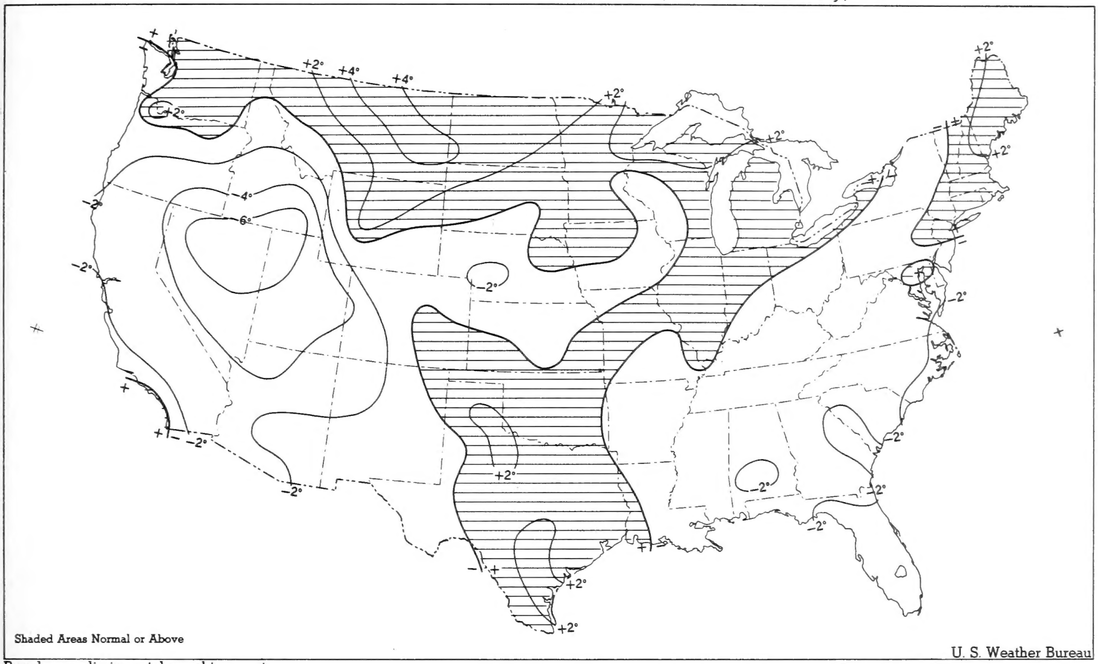
DESTRUCTIVE STORMS. --During 1955 damage caused by high winds, lightning, hail and tornadoes amounted to about one-half billion dollars. Over $400,000,000 of this total was attributed to winds, over $50,000,000 to hail, and more than $30,000,000 to tornadoes. These storms were also responsible for over 400 deaths and more than 8,000 injuries.

The year's worst tornadoes struck Blackwell, Okla., and Udall, Kans., on June 25, killing 100 persons and destroying property estimated at $10,225,000. The worst hailstorm caused $6,000,000 damage in Billings, Mont., and vicinity on July 6. During November and December several periods of high winds in the Northwest caused widespread damage. Damage in California alone during the period December 18 to 27 was estimated at $2,750,000. (From Climatological Data. National Summary, Annual 1955, Vol. 6. No. 13).

The Maps on pages 199, 200, 201, and 202, show the temperature and precipitation for the winter of 1954-55, spring, summer, and fall of 1955.

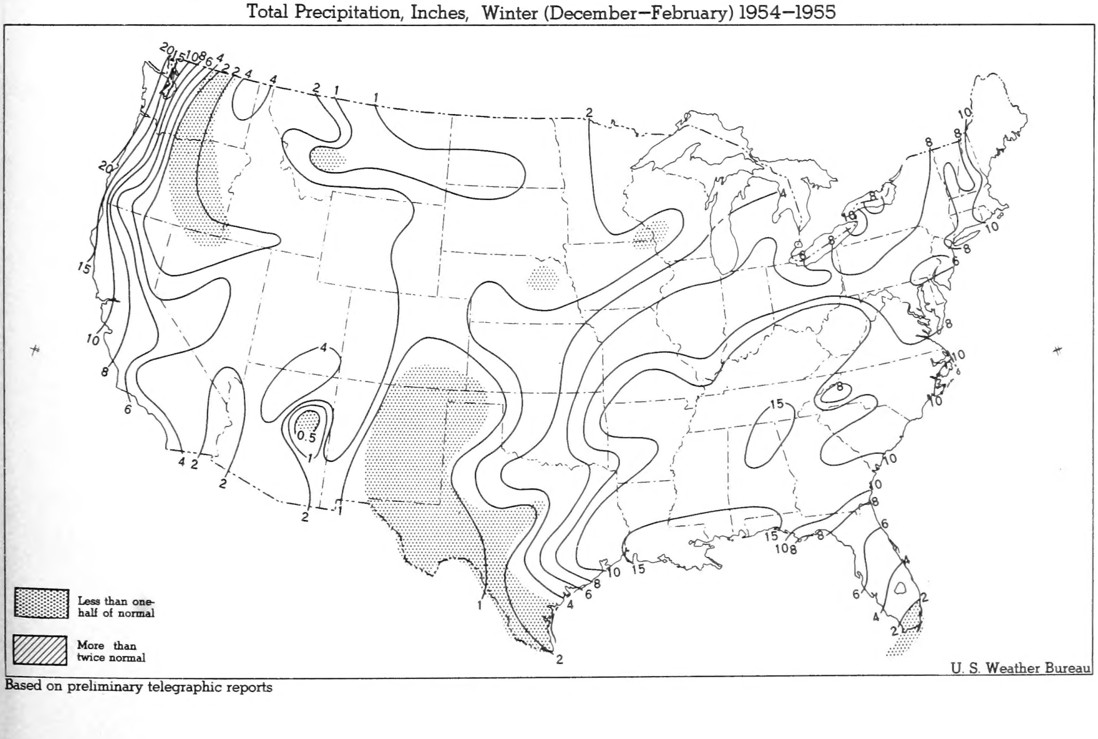
TEMPERATURE AND PRECIPITATION

Departure of Average Temperature from Normal (°F.), Winter (December–February) 1954–1955



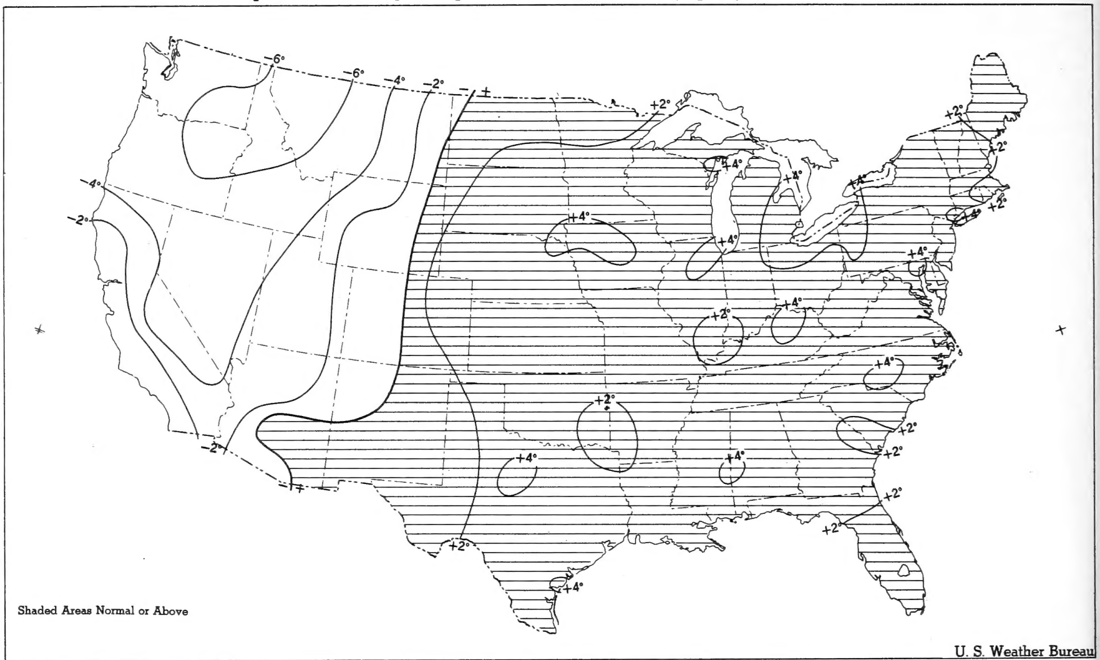
Based on preliminary telegraphic reports

Total Precipitation, Inches, Winter (December–February) 1954–1955



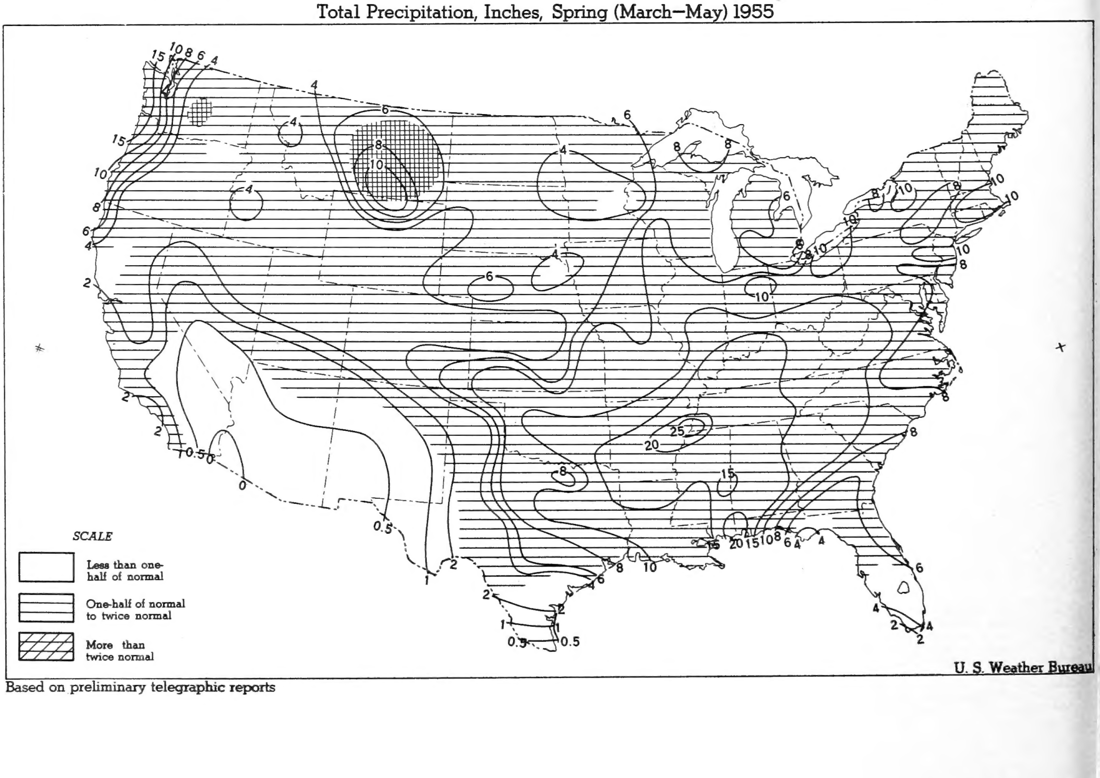
Based on preliminary telegraphic reports

Departure of Average Temperature from Normal (°F.), Spring (March—May) 1955



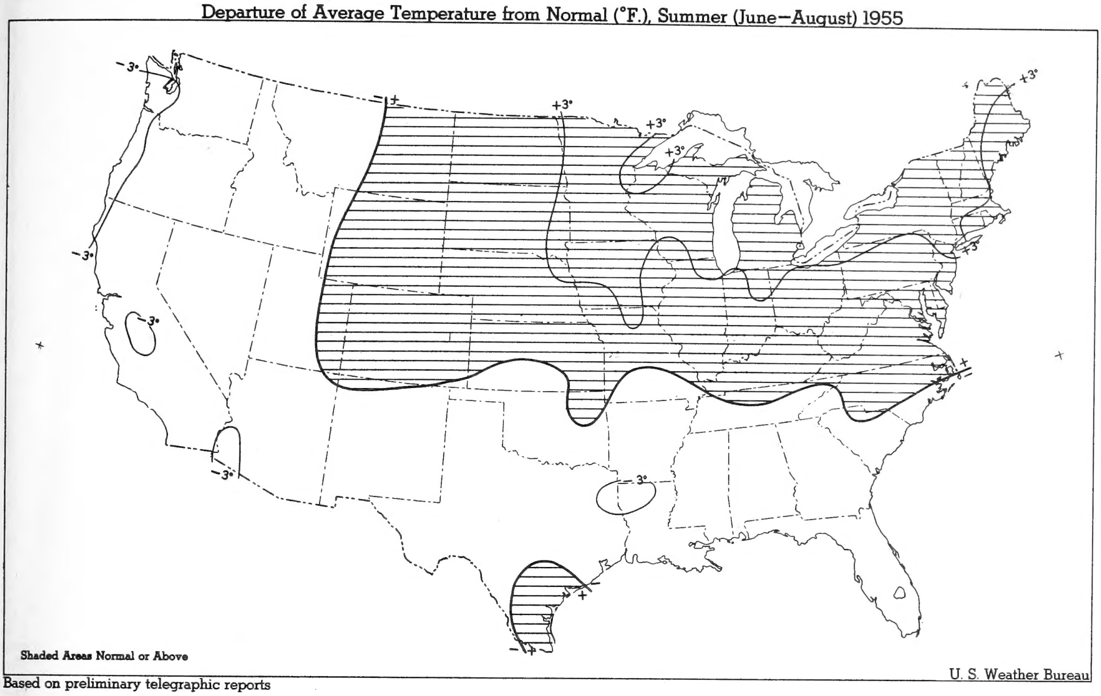
Based on preliminary telegraphic reports

Total Precipitation, Inches, Spring (March—May) 1955



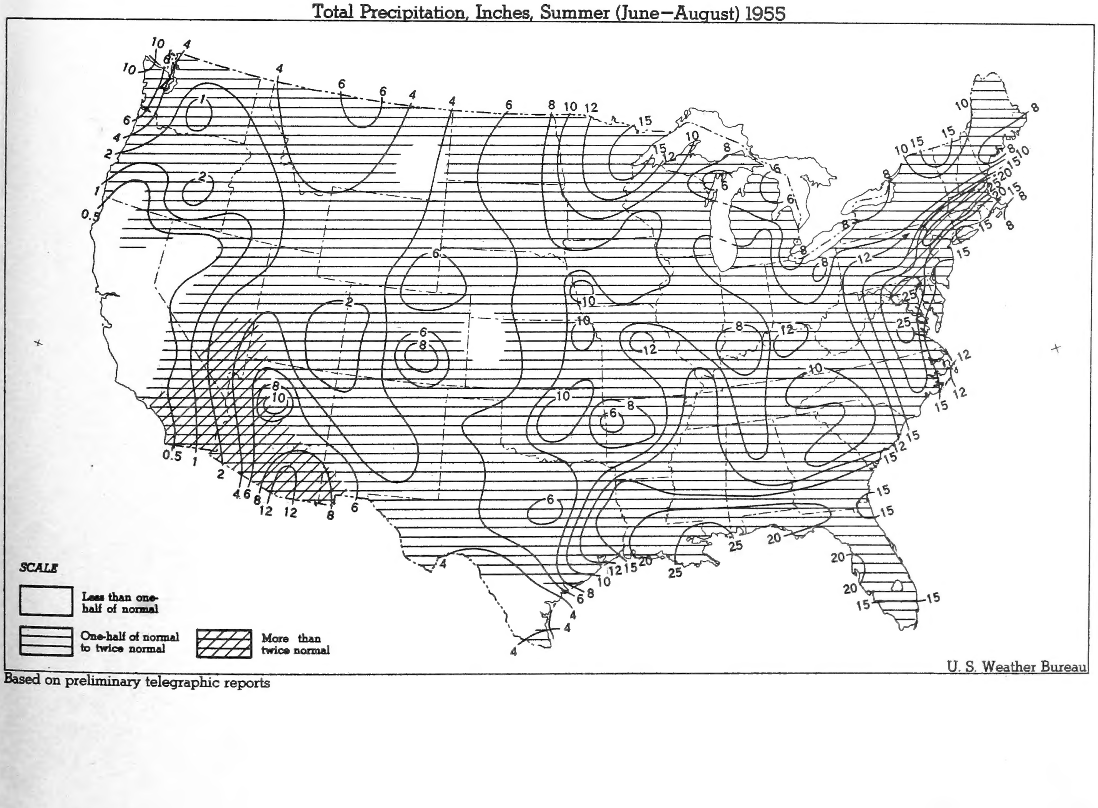
Based on preliminary telegraphic reports

Departure of Average Temperature from Normal (°F.), Summer (June–August) 1955



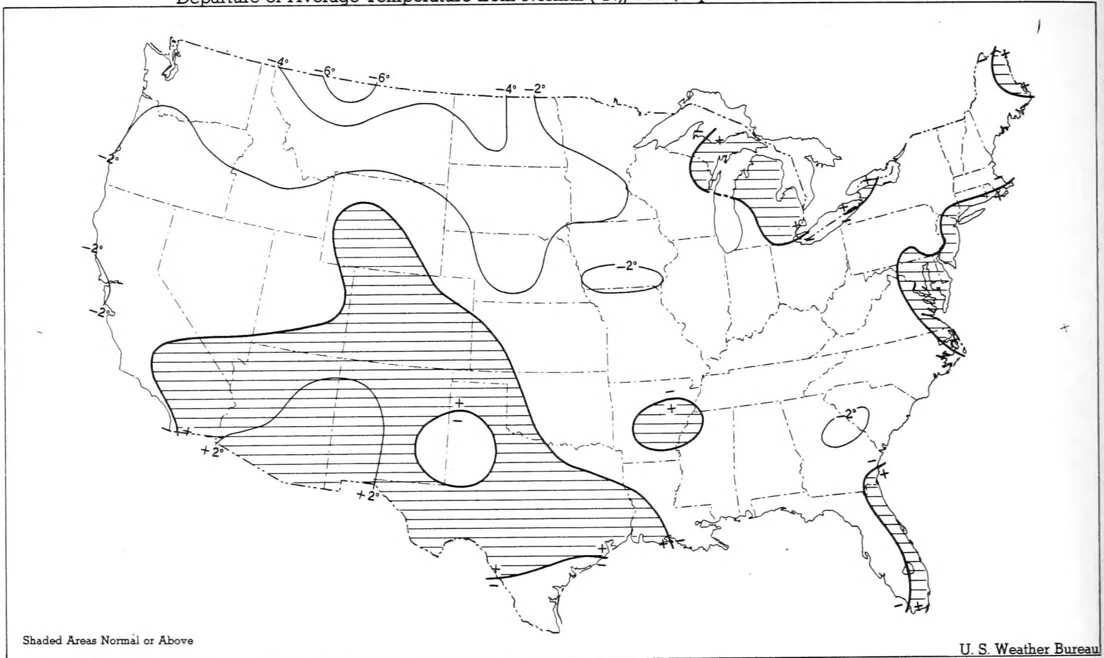
Based on preliminary telegraphic reports

Total Precipitation, Inches, Summer (June–August) 1955



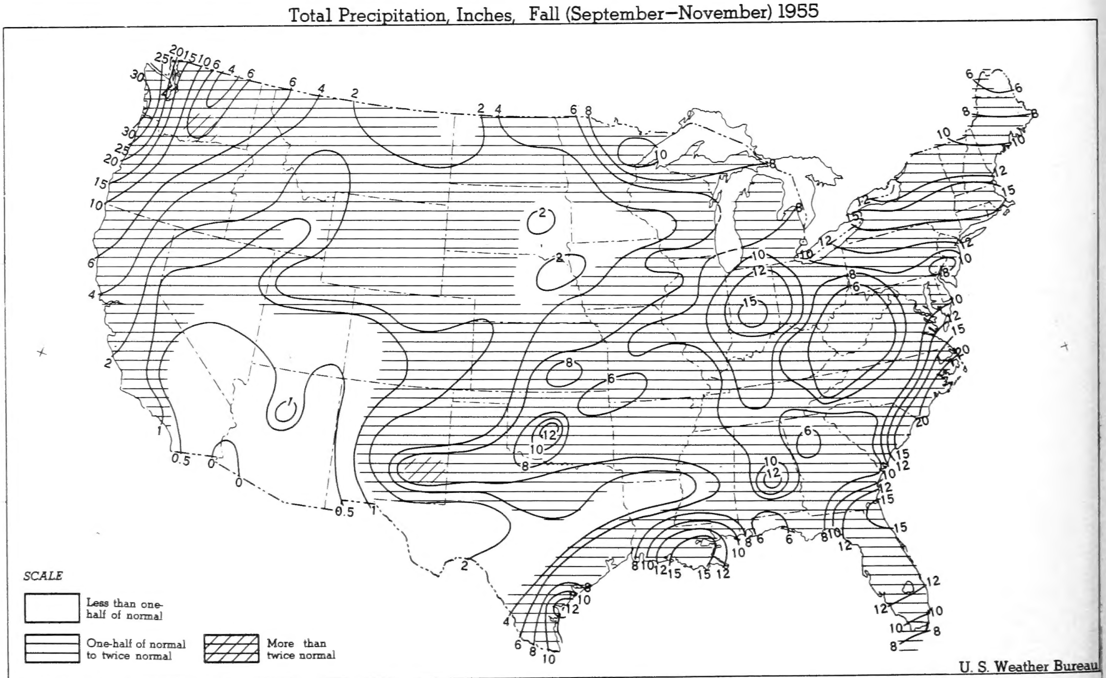
Based on preliminary telegraphic reports

Departure of Average Temperature from Normal (°F.), Fall (September—November) 1955



Based on preliminary telegraphic reports

Total Precipitation, Inches, Fall (September—November) 1955



Based on preliminary telegraphic reports

(From Weekly Weather and Crop Bulletin National Summary, Volume 42, 1955)

Table 1. Diseases reported in States where they had not been found or reported on a particular host until 1955[1, 2].

Host Disease (Cause)	Where found	Remarks
BARLEY (HORDEUM VULGARE)		
Downy mildew (Sclerospora macrospora)	Mississippi	Found on several varieties of barley (PDR 40: 258).
	Virginia	Destroyed 40 percent of wheat, oats and barley grains in a field in Henrico County (PDR 39: 695).
Leaf spot (Undetermined origin, possibly physiological)	Virginia	The distribution of the disease in the field suggested that the plants were absorbing from the soil a toxic residue produced by the woodland flora (PDR 39: 695).
OATS (AVENA SATIVA)		
Downy mildew (Sclerospora macrospora)	Virginia	See barley
WHEAT (TRITICUM AESTIVUM)		
Downy mildew (Sclerospora macrospora)	Mississippi	Found in two locations. (PDR 40: 258)
	Virginia	See barley
LEMON (CITRUS LIMONIA)		
Tristeza virus	Texas	This is the first report of the tristeza virus in Texas, though it is probable that it has been present on some Meyer lemon trees for over 25 years. (Proc. Rio Grande Valley Hort. Inst. 8: 84. 1954).

[1] Kilpatrick, R. A. and G. M. Dunn. Late season diseases on forage crops in New Hampshire in 1955. (PDR 40: 384). Many diseases were reported as being recognized in New Hampshire for the first time.

[2] Rogerson, Clark T. Diseases of grasses in Kansas: 1953-55 (PDR 40: 388). Seventeen fungi, previously unreported for Kansas, were found associated with grass diseases. In addition 30 new Kansas host records were obtained.

Host Disease (Cause)	Where found	Remarks
FIG (FICUS CARICA) Phomopsis cinerascens	Maryland	A very rare fungus on figs in the United States. Caused canker and die-back of a single fig tree at Cheverly, Maryland (PDR 39: 822).
PEACH (PRUNUS PERSICA) Zinc deficiency	Michigan	This is the first record for any of the Central States between the Alleghany and Rocky Mountains. (Mich. Agr. Exp. Sta. Quart. Bull. 38 (1): 70, 1955).
DOTTED SMARTWEED (POLYGONUM PUNCTATUM) Smut (Ustilago utriculosa)	Pennsylvania	Dotted smartweed seed is an important waterfowl food; occurs in almost pure communities in certain areas in Pennsylvania (PDR 40: 1017).
OLEANDER (NERIUM OLEANDER) Sphaceloma oleanderi	Florida	First record in the State. In the U. S., previously reported from Louisiana (PDR 40: 256).
LOBLOLLY PINE (PINUS TAEDA) Needle rust (Coleosporium laciniariae Arth.)	Virginia	Collected at Waynesboro in Augusta County (PDR 39: 695).
LOMBARDY POPLAR (POPULUS NIGRA var. ITALICA) Yellow leaf blister (Taphrina populina Fr.)	Virginia	Collected at Long Shop in Montgomery County (PDR 39: 695).
SUGAR BEET (BETA VULGARIS) Sugar beet nematode (Heterodera schachtii)	Oregon	Occurred in Umatilla County, one of the principal sugar beet producing areas of Oregon (PDR 40: 406).
EGGPLANT (SOLANUM MELONGENA) Verticillium wilt (Verticillium albo-atrum)	Florida	Observed on the organic and adjacent mineral soils of south Florida during the past two years (1954-1955) (PDR 40: 583).

Table 1. (Continued)

Host Disease (Cause)	Where found	Remarks
POTATO (SOLANUM TUBEROSUM) Speck rot (Stysanus stemonites)	Virginia	The fungus appeared on the surface of cut potatoes held a few days in a moisture chamber (PDR 39: 695).

Table 2. Diseases found or reported in this country for the first time in 1955=*; diseases found on new hosts=**, 1, 2.

CORN (ZEA MAYS) (Curvularia maculans)	North Carolina Georgia	A new disease of corn. No previous report describing this fungus as a plant pathogen has been found in the literature (PDR 40: 210).
WHEAT (TRITICUM AESTIVUM) Stripe disease* (Cephalosporium gramineum)	Washington	A disease of winter wheat apparently previously unreported in the United States was observed on wheat during June and July of 1955. Found in five counties (Phytopath. 46: 178).
AGROPYRON INERNE A. TRACHYCAULUM A. TRICHOPHORUM BROMIS MARGINATUS Dwarf bunt** (Tilletia controversa)	Oregon Idaho Oregon Oregon	Dwarf bunt for many years was reported only on wheat in the U. S.; recently has been found on a number of forage grasses and rye. (PDR 40: 26).
PERENNIAL RYEGRASS (LOLIUM PERENNE) ITALIAN RYEGRASS (L. MULTIFLORUM) Dwarf bunt** (Tilletia controversa)	New York	The diseased ryegrass plants were growing among winter wheat plants in an experimental field nursery maintained for studies of dwarf bunt. (PDR 40: 508).

[1]Sprague, Roderick. Some leafspot fungi on western Gramineae. Mycologia 47: 835-845. 1955. Descriptions are given of new and noteworthy fungi collected chiefly in north-central Washington, Idaho, and the Rocky Mountains.

[2]Wilhelm, Stephen, Robert D. Raabe, and Eugene B. Smalley. Some previously unrecorded hosts of Verticillium albo-atrum in California (PDR 39: 693).

Table 2. (Continued).

Host Disease (Cause)	Where found	Remarks
DOWNY CHESS (BROMUS TECTORUM) HAIRY CHESS (B. COMMUTATUS) Bacterial blight (Xanthomonas translucens var. undulosa)**	Nebraska	Apparently a strain of the pathogen is involved which differs from that on wheat; greenhouse experiments indicated that the brome strain is weakly parasitic on cereals and is of minor importance in the development of Xanthomonas streak on the latter in the field. (PDR 39: 751).
ORCHARD GRASS (DACTYLIS GLOMERATA) Pleospora phaeocomes**	Pennsylvania	This hitherto undescribed disease of orchard grass has been under observation in Pennsylvania since 1953. First record of its presence in the United States (Phytopath. 45: 633).
LOTUS ULIGINOSUS Crown wart* (Physoderma potteri)	Oregon	The first diseased specimens were found in 1952 in a one-year old planting of L. uliginosus along the Tillamook River several miles inland from the Pacific Ocean. The disease appears to present an important new problem affecting utilization in wet locations of L. uliginosus, which has become a valuable forage legume (PDR 39: 749).
GOOSE-GRASS (ELEUSINE INDICA) LOVE-GRASS (ERAGROSTIS PECTINACEA) STINK-GRASS (ERAGROSTIS CILIANENSIS) (Crazy top** (downy mildew) (Sclerophthora macrospora)	Indiana	New hosts. Sporangia developed sparsely only on leaves of crabgrass (Digitaria sanguinalis). Sporangia were also found on a corn plant severely affected with crazy top (PDR 39: 839).
PEARL MILLET (PENNISETUM GLAUCUM) Top rot* (Fusarium moniliforme)	Georgia	First report of top rot (twisted top or Pokkah Boeng) on this host in the U.S. The disease has been reported on pearl millet in India (PDR 40: 387).
FIG (FICUS ELASTICA) Heterodera fici*	California	Collections from soil and root samples from a specimen of fig showing poor growth in a nursery at San Bernardino in November 1954 represent the first record of this nematode in the United States (PDR 40: 700).

Table 2. (Continued)

Host Disease (Cause)	Where found	Remarks
HIGHBUSH BLUEBERRY (VACCINIUM CORYMBOSUM) New gall disease (Undetermined)	Massachusetts	Description given of a new disease affecting roots and branches of cultivated highbush blueberry (PDR 40: 212).
SWEET CHERRY (PRUNUS AVIUM) Microstroma tonellianum* **	Massachusetts	Originally described on plum leaves in Italy. A similar fungus has been reported on peach leaves in South Carolina, but not certain that it is the same species as the plum fungus. This appears to be the first report of this fungus on cherries, and the first report in North America (PDR 39: 697).
ALMOND (PRUNUS AMYGDALUS) Powdery mildew* (Podosphaera tridactyla)	California	Powdery mildew on almond seems to be uncommon (PDR 40: 584).
CALLISTEMON RIGIDUS HYDRANGEA sp. ILEX ROTUNDIFOLIA MAGNOLIA SOULANGEANA POINSETTIA PULCHERRIMA PYRACANTHA sp. RHODENDRON INDICA R. OBTUSA JAPONICUM Cylindrocladium scoparium**	Alabama	Reported as causing extensive losses of ornamental cuttings in propagation houses. Host range of the fungus extended to 8 new host species (PDR 39: 860).
CACTACEAE Helminthosporium stem rot (H. cactivorum)**	California	Application of captan together with eradication of diseased plants and soil sterilization gave control (Phytopath. 45: 509).
MAGNOLIA GRANDIFLORA Elsinoë magnoliae A. H. Miller and Jenkins	Southern United States	A new species of Elsinoë causing leaf scab. (Mycologia 47: 104).
RHODODENDRON Chrysomyxa ledi var. rhodendri*	Washington	First record of its appearance in the United States. Believed to have been introduced from Europe (PDR 39: 781).

Table 2. (Continued).

Host Disease (Cause)	Where found	Remarks
ASPEN (POPULUS TREMULOIDES) Sooty-bark canker* ** (Cenangium singulare (Rehm) Davidson and Cash)	Colorado	Described here for the first time, reported from the central Rocky Mountains. Occurs at various heights on the trunk. Most abundant on diseased bark of killed trees (Phytopath. 46: 34).
HONEYLOCUST (GLEDITSIA TRIACANTHOS) Cankers and rot** (Poria spiculosa)	Mississippi Tennessee	White heart rot was also associated with these cankers (Jour. Forestry 52: 941).
LODGEPOLE PINE (PINUS CONTORTA) Dwarfmistletoe** (Arceuthobium vaginatum f. cryptopodum)	Colorado	Dwarfmistletoe kills some lodgepole pines, but is of no practical importance on the tree. Apparently first report on this host (PDR 40: 252).
MIMOSA (ALBIZZIA JULIBRISSIN) Stubby-root nematode** (Trichodorus primitivus)	Maryland	Trichodorus sp. has previously been reported from Maryland, but this is the first report of T. primitivus. Apparently no other hosts of this species have been recorded (PDR 40: 259).
PERSIMMON (DIOSPYROS spp.) Citrus-root nematode** (Tylenchulus semipenetrans)	California	Found in November 1955 attached to field grown persimmon roots, including D. lotus seedlings and D. lotus rootstock with scions of the Hachiya variety. (PDR 40: 276).
PERSIMMON (DIOSPYROS LOTUS) Elsinoë diospyri* **	Florida	Additional host and first U. S. record. (PDR 40: 256).

Table 2. (Continued).

Host Disease (Cause)	Where found	Remarks
COTTON (GOSSYPIUM SPP.) Bacteriophage of Xanthomonas malvacearum	Texas New Mexico	A bacteriophage attacking Xanthomonas malvacearum of cotton was isolated at College Station, Texas, from dried diseased leaves, apparently for the first time in the United States. Observations suggest that bacteriophage isolates from Texas and New Mexico may prove useful in the identification of strains of the bacterium occurring throughout the cotton belt. (Phytopath. 45: 454).
SESAME (SESAMUM INDICUM) Aerial stem rot* (Helminthosporium sesami)	Texas	Apparently not previously reported from the U. S. The disease was found attacking almost mature plants of the variety Guacara in the breeding nursery near College Station, in 1954 (PDR 40: 235).
SUGARCANE (SACCHARUM OFFICINARUM) Root-knot nematode** (Meloidogyne incognita var. acrita)	Louisiana	(PDR 40: 406).

GENERAL

J. O. Andes reported estimated loss from plant diseases of major importance in Tennessee in 1955 (PDR 40: 162).

Results of a survey to determine occurrence of plant parasitic nematodes in Louisiana soils were reported by Fielding and Hollis. A total of 461 samples from 13 major crop plants was analyzed and the results given in a table. The breakdown included the number of samples, names of the parasitic nematodes for each crop plant, and the percentage of samples infested with a particular nematode. Species of the genus Pratylenchus were most common among the parasitic nematodes found in the Louisiana soil surveyed (PDR 40: 403).

U. R. Gore and others comment on the diseases of barley, oats, rye and wheat in Georgia in 1955 (PDR 40: 224).

J. O. Andes reported estimated loss from plant diseases of major importance in Tennessee in 1955 (PDR 40: 162).

G. B. Cummins and R. M. Caldwell discuss nomenclature in the leaf rust fungus (Puccinia spp.) complex of cereals and grasses (Phytopath. 46: 81).

Results of the 1954 cereal seed-treatment trials in Michigan were reported by Kiesling and Grafius. In the annual seed treatment trials wheat naturally infested with bunt (Tilletia foetida) and oats inoculated with smut (Ustilago avenae and U. kolleri) were treated with 16 different fungicides. Dusts gave poor control of bunt owing to the heavy spore load, and the results indicated the importance of cleaning grain before treating. Slurry and liquid treatments gave much better control through better coverage (Mich. Agr. Exp. Sta. Quart. Bull. 37: 457-460. 1955).

R. W. Leukel summarized results of the 1954-55 tests of seed treatment materials for the control of oat loose smut (Ustilago avenae) and wheat bunt (Tilletia sp.). He included some data on the amount of seed treated before planting (PDR 39: 647).

Results of the 1955 cooperative seed treatment trials were reported by J. E. Machacek. A comparison was made, under experimental plot conditions at 25 stations, of the effectiveness of a number of recently introduced seed dressings against the surface-borne smuts of wheat, oats, and barley, and against seed rot of flax. All the products tested were effective against bunt of wheat, and most of them against seed rot of flax (PDR 40: 33).

Various cereal and forage crop plants and grasses, as well as other monocotyledonous and dicotyledonous plants, were inoculated to determine their reaction to the yellow strain of wheat mosaic virus, Marmor virgatum var. typicum. Of the crop plants tested only wheat and certain millets were susceptible enough to be damaged severely by the disease. Many varieties of corn were immune in these tests. (W. H. Sill, Jr. and P. C. Agusiobo, PDR 39: 633).

Transmission experiments with the Washington strain of the cereal yellow-dwarf virus indicated that the apple-grain aphid (Rhopalosiphum fitchii) is a more efficient vector than the English grain aphid (Macrosiphum granarium), and also that the virus components transmitted by each species were not the same, according to H. V. Toko and G. W. Bruehl (PDR 40: 284).

Weather injuries. H. R. Rosen described the severe injury to small grains in Arkansas that resulted from sudden freezing weather in late March 1955. (PDR 40: 30).

AVENA SATIVA. OATS: Investigations on the microflora associated with oats in storage and collected in the field in Illinois were reported by S. A. Ostazeski and Wayne M. Bever (PDR 39: 591).

D. C. Arny compared results from seed-treatment materials applied to oats in laboratory studies and with commercial treating machines (PDR 40: 364).

Puccinia coronata var. avenae, crown rust. The distribution and relative prevalence of the physiologic races of oat crown rust identified in 1955 are listed (M. D. Simons, PDR 40: 810).

Oat mosaic virus was severe in 1952-53, and even more so in 1954-55, in an autumn-sown oat nursery in Beaufort County, South Carolina. Approximately a third of the 29 named varieties and of the 48 unnamed selections included in three nurseries were rated as being too susceptible for safe growing on infested soil. Wheat varieties and selections grown in the same nursery showed no signs of infection (S. J. Hadden and H. F. Harrison, PDR 39: 628).

H. H. McKinney described a virus from orchard grass (Dactylis glomerata) that infects oats. Limited tests showed that the virus infects some varieties of oats, and that the virus from oats infects orchard grass (PDR 40: 524).

HORDEUM VULGARE. BARLEY: R. E. Ohms reported a phycomycetous mycorrhizal fungus found on barley roots in South Dakota (PDR 40: 507).

In Colorado, R. H. Porter reported seed treatments for stripe (Helminthosporium gramineum) and covered smut (Ustilago hordei) of barley. In 1955, Merlane, Merculine, and Panogen controlled covered smut effectively without significantly increasing or decreasing the yield in comparison with the checks (PDR 40: 112).

Puccinia graminis tritici, stem rust. Adequate resistance to race 59A of stem rust was found among more than 1200 spring barley lines screened for resistance by J. D. Miller and J. W. Lambert (PDR 40: 340).

Antibiotics were included among materials tested by R. H. Porter for control of barley loose smut, Ustilago nuda (PDR 40: 106). U. nuda remained viable in barley seed embryos for 11 years in one proved instance reported by R. H. Porter from Colorado. (Phytopath. 45: 637.

Pyrenophora teres, net blotch. Studies at the University of California, reported by C. W. Schaller, showed that inheritance of resistance of the Tifang variety to net blotch is controlled by a single gene pair, and that resistance is incompletely dominant. (Phytopath. 45: 174).

H. H. McKinney reported studies with dual infections by different strains of barley stripe-mosaic virus and by the viruses of barley stripe mosaic (PDR 40: 520).

W. H. Sill and E. D. Hansing discussed the distribution and importance of barley stripe mosaic in Kansas where two strains of the virus have been found. Some fields suffered severe losses. (PDR 39: 670). The time of infection by the barley stripe mosaic virus affected symptom expression, yield and seed infection, according to R. F. Eslick and M. M. Afanasiev in Montana (PDR 39: 722).

Allen and Houston reported the results of a survey concerning the distribution of the barley yellow-dwarf virus. It was found to be widely distributed in California, and was shown to be present in specimens from 8 additional States, as follows: Arizona, Arkansas, Illinois, Maryland, Minnesota, Oregon, Washington and Wisconsin. (PDR 40: 21).

LINUM USITATISSIMUM. FLAX: In California, Knowles and Houston reported the inheritance of resistance to Fusarium wilt (F. oxysporum f. lini) of flax in Dakota selection 48-94. (Jour. Agron. 47: 131).

ORYZA SATIVA. RICE: Piricularia oryzae, blast. According to J. G. Atkins rice blast had almost disappeared in the Gulf Coast area in recent years, but an outbreak in 1955 demonstrated its potential importance again (PDR 40: 373).

Tylenchorhynchus martini, stylet nematode. J. G. Atkins and M. J. Fielding concluded that the marked improvement of rice yields resulting from soil fumigation for stylet nematode control may be due to the effect of the chemicals upon a nematode-root rot complex (PDR 40: 488).

SORGHUM VULGARE. SORGHUM: C. H. Hsi described the different types of stalk rots of sorghum prevalent in eastern New Mexico in 1955, including Colletotrichum and Fusarium stalk rots newly recognized in the State (PDR 40: 369).

Rhizopus oryzae was reported by R. H. Porter as the cause of severe injury to sorghum seed in Colorado. Results of three control tests were summarized (PDR 40: 141).

Sphacelotheca sorghi, covered kernel smut. R. W. Leukel reported sorghum seed-treatment tests in 1955. The superiority of Phygon compared with mercurials and with other non-mercurials in controlling covered kernel smut in Rancher sorgo, especially with the heavier applications, indicates that it is the logical choice as a seed disinfectant for sorghum seed with persistent glumes (PDR 40: 138).

TRITICUM AESTIVUM. WHEAT: In Illinois, B. Koehler and W. M. Bever reported results of investigations on toxicity of various chemicals to wheat seed and on the effect of storage temperature on injury to treated seed (PDR 40: 490).

Aspergillus restrictus. In grain storage studies, C. M. Christensen reported mold invasion of wheat stored for 16 months at moisture contents below 15 percent. A. repens and A. ruber were prevalent at 14.5 to 15 percent. (Cereal Chem. 32: 107).

Cephalosporium gramineum, stripe. In Washington, G. W. Bruehl described symptoms of the prematurity blight phase of Cephalosporium stripe disease of wheat as observed in greenhouse experiments in 1955. (PDR 40: 237).

Erysiphe graminis tritici, powdery mildew. Willard Crosier and Michael Szkolnik reported that Acti-dione was inferior to sulfur and Karathane for control of wheat powdery mildew in greenhouse experiments in New York (PDR 40: 337).

According to C. H. Hsi, dryland root rot was widespread in eastern New Mexico in 1955 for the third consecutive year. Root rot organisms commonly isolated from the diseased plants included Helminthosporium sativum, Rhizoctonia solani, Fusarium spp., and Curvularia spp. (PDR 40: 361).

Puccinia spp., rust. Leaf rust (P. rubigo-vera var. tritici) was rare in Kansas the fall of 1954, both on spore trap slides and in the field, whereas stem rust (P. graminis var.

tritici) was relatively abundant. Conditions were unfavorable for overwintering of stem rust and, with few exceptions, this was true also for leaf rust. The loss from leaf rust for the State was estimated at 1 percent. High temperatures and low rainfall effectively checked stem rust development and the average loss was only a trace (S. M. Pady and C. O. Johnston, PDR 40: 882). Johnston, and Levine published the fifth revision of the international register of physiological races of leaf rust of wheat, which adds 31 more races, bringing the total to 163. A tabulated summary shows the author and year of publication of all races described to date (PDR Suppl. 233, pp. 104-120). In Nebraska Aristeo Acosta and J. E. Livingston reported the effects of calcium sulfamate and sodium sulfanilate on small grains and on stem rust development. Injury to wheat from calcium sulfamate was found to depend on the stage of growth at which the treatments were given. Yields were reduced only by applications at tillering, and germination was impaired by applications following pollination. Treatment with sodium sulfanilate a week after tillering and 6 days after flowering resulted in a significant increase in yield (Phytopath. 45: 503).

Tilletia controversa, dwarf bunt. Depth of seeding of wheat and the critical environmental factors in relation to the incidence and germination of dwarf bunt spores were reviewed by J. P. Meiners and others. Dwarf bunt was most prevalent where the seed was planted at or near the surface level of the soil. As the depth of seeding was increased up to 4 inches the percentage of infection decreased (PDR 40: 242).

Tilletia spp, bunt. R. W. Newburgh and V. H. Cheldelin reported that of the ten antibiotics tested in Oregon, oligomycin alone resulted in a 100 percent inhibition of the in vitro growth of T. caries (PDR 39: 684). Results achieved in the control of wheat bunt (Tilletia foetida) and the history of the disease in Kansas during the past 42 years were discussed by L. E. Melchers and others (PDR 40: 493).

Wheat streak mosaic virus. F. H. McNeal and A. L. Dubbs reported losses from wheat streak mosaic in Montana in 1955 (PDR 40: 517). Hurley Fellows gave directions for the construction of equipment to facilitate study of the mite vector (Aceria tulipae) of wheat yellow streak mosaic virus (PDR 40: 601).

ZEA MAYS. CORN: L. E. Melchers reported studies on the fungi isolated from Kansas-grown hybrid seed corn, 1952-1954. Fusarium moniliforme was by far the most prevalent but is not considered important in Kansas. (PDR 40: 500).

Bacterium stewartii, Stewart's wilt, bacterial wilt. Results of corn seed treatment with various antibiotics, growth regulators, and other chemicals to control the disease were reported by Saul Rich in Massachusetts (PDR 40: 417). Bacterial wilt was predicted by G. H. Boewe in his seventh forecast to be less destructive in 1955 and not to occur so far north in Illinois as it did in 1953 or 1954. Entomological research in Illinois in 1954 indicated that dieldrin is very effective in controlling the corn flea beetles in which the organism overwinters. Forecasting of bacterial wilt incidence is based upon the close relationship that appears to exist between the amount of disease which develops during the summer and the temperature of the preceding winter, but other, unknown, factors may affect the accuracy of the prediction. For example, in 1954 early season wilt was much less severe than expected except in localized areas. (PDR 39: 384).

Fusarium moniliforme, mold. As part of a cooperative study investigating the effect of feeding moldy corn to swine, Nelson and Osborne reported that an extensive survey was made to determine the relative prevalence and geographic distribution of fungi associated with moldy corn. One or more samples of moldy corn were obtained from each of 26 counties in eastern North Carolina. The survey indicated that F. moniliforme was the most widespread and prevalent fungus on moldy corn (PDR 40: 225). (See also L. E. Melchers' report above.)

Gibberella zeae, stalk rot. Raymond Cappellini reported on the incidence and percentage of stalk rot of corn in New Jersey in 1955. Percentage infection ranged from 0 to 35, with an average of 10 percent. G. zeae was isolated most frequently (average 69 percent) (PDR 40: 244).

Investigations on control of the Helminthosporium blight diseases (H. turcicum and H. maydis) on sweet corn in Florida were reported by R. S. Cox (Phytopath. 46: 112).

In Iowa, A. L. Hooker reported that corn seedling resistance to Pythium appeared to be effective against several Pythium species (Phytopath. 46: 175).

Nematodes. Root growth was better and ears were larger in plots of corn treated for control of parasitic nematodes (Tylenchorhynchus sp., Trichodorus sp., Pratylenchus zeae) (J. Y. Oakes and others, PDR 40: 853). During a 1955 survey in Maryland 25 genera of known or suspected plant-parasitic nematodes were found on corn, tobacco, and soybean, according to W. R. Jenkins and others (PDR 40: 37). Susceptibility to attack by the stunt nematode (Tylenchorhynchus claytoni) seems dominant to resistance in corn, according to studies reported by R. R. Nelson in North Carolina (PDR 40: 635).

ZEA MAYS var. SACCHARATA. SWEET CORN: Bacterium stewartii, bacterial wilt. J. L. Lockwood and L. E. Williams reported results of field tests with antibiotics and Tween 20 for the control of bacterial wilt. Corn flea beetles (Chaetocnema pulicaria) were abundant at Wooster and Marietta, Ohio at emergence of the corn and throughout the growing season. Most diseased plants in 1955 grew and produced marketable ears (PDR 40: 622).

DISEASES OF FORAGE AND COVER CROPS

Prevalence and importance of diseases of forage crops in New York in 1955, with estimates of crop losses, were reported by D. A. Roberts and others (PDR 40: 219).

R. A. Kilpatrick and G. M. Dunn reported late season diseases on forage crops in New Hampshire in 1955. Many of the diseases were recognized in New Hampshire for the first time (PDR 40: 384).

The frequent occurrence of plant parasitic nematodes in samples from 368 fields of cover, pasture, and forage crops in Maryland was reported by W. R. Jenkins and others. The most frequently found genera of plant parasites were Xiphinema, Pratylenchus, and Tylenchorhynchus (PDR 40: 184).

GRASSES

AGROPYRON TRACHYCAULUM. SLENDER WHEATGRASS: Tilletia controversa, dwarf bunt. In the Pacific Northwest Jack P. Meiners reported that in a recent series of inoculations slender wheatgrass became infected with dwarf bunt from wheat. Apparently this is the first report of a grass being found susceptible to wheat dwarf bunt by inoculation. The same inoculation procedure and inoculum also resulted in infection on Orin wheat (PDR 40: 347).

ANDROPOGON GERARDI, BIG BLUESTEM: Aecidium aesculi, buckeye rust was known only from Kansas and Nebraska until 1952, when it was collected on Aesculus glabra in Iowa. Observations made in the area by J. W. Baxter indicated a possible connection between the Aecidium on Aesculus and Puccinia andropogonis on big bluestem. Aeciospores of Aecidium aesculi were used to inoculate young plants of A. gerardi grown from seed in the greenhouse. Uredia of P. andropogonis appeared on all the inoculated plants from 7 to 10 days after inoculation (PDR 39: 658).

Sphacelotheca occidentalis, kernel smut. J. Dunleavy stated that this disease has been reported only from the United States and Canada. It causes severe stunting. The smut overwinters in the rhizomes of infected plants, which deteriorate and die in a few years. A histological examination of plants taken as sods from local pastures or grown from seed harvested in Nebraska disclosed the presence of hyphae throughout the parenchyma cells of the rhizomes, stems, and flowers, but not in the meristematic zones (Phytopath. 46: 116).

BROMUS INERMIS. SMOOTH BROME GRASS: A severe outbreak of brome mosaic virus affected many clones of smooth brome grass in the grass breeding nursery at Kansas State College in 1955. In a small 3-year-old nursery 116 out of 650 plants were infected. The wide distribution of the virus in Kansas and the severity of the disease on several other small grains and grasses after artificial inoculation indicate its potential importance. Every effort should be made to check its spread and eliminate it from breeding nurseries (W. H. Sill and R. C. Pickett, PDR 39: 802).

POA PRATENSIS. KENTUCKY BLUEGRASS: Puccinia graminis, rust. During the 1955 growing season, rust of Merion bluegrass was epiphytotic in many areas of Pennsylvania, according to H. B. Couch and Herbert Cole, Jr. Five compounds tested provided some measure of control. Acti-dione was most satisfactory, followed by a Dithane-zinc-copper formulation. Both were phytotoxic (PDR 40: 103).

STENOTAPHRUM SECUNDATUM. ST. AUGUSTINE LAWN GRASS: Lawns of St. Augustine grass in Mobile, Alabama suffered severe damage from a species of Physalospora, according to R. L. Self and C. H. Driver (PDR 40: 509).

LEGUMES

J. W. Baxter reported incidence of forage legume diseases in Iowa in 1955 (PDR 40:217).

In tests conducted in Iowa to determine the relative toxicity of legume seed protectants to Rhizobium spp., Ceresan M was found to be highly toxic, Arasan and Arasan SF were intermediate, and Spergon and wettable Spergon showed very low toxicity. R. meliloti was somewhat less sensitive to all fungicides than R. japonicum. It was thought that Ceresan M and higher dosages of Arasan and Arasan SF may prove to be sufficiently toxic to R. meliloti and R. japonicum to inhibit nodulation (G. W. Peterson and W. F. Buchholtz, Iowa State Coll. Jour. Sci. 29(1): 95.

CYAMOPSIS TETRAGONOLOBA. GUAR: Yarwood and Gold stated that of the various hosts tested at the University of California for reaction to potato virus S only guar showed symptoms. Examination by the electron microscope of sap extracted from lesions revealed rod-shaped particles typical of potato virus S (PDR 39: 622).

GLYCINE MAX. SOYBEAN: Heterodera schachtii var. trifolii, clover cyst nematode. From tests with an Illinois population of the clover cyst nematode Mankou and Linford concluded that none of the 27 soybean varieties exposed to infestation would be likely to support a population of this nematode (PDR 40: 39).

Meloidogyne arenaria, root knot. M. D. Whitehead and others reported severe root-knot nematode infection of the soybean variety Lee in Dunklin County, Missouri (PDR 40: 176).

During a 1955 survey in Maryland 25 genera of known or suspected plant-parasitic nematodes were found on corn, tobacco, and soybean, according to W. R. Jenkins and others (PDR 40: 37).

R. P. Kahn and F. M. Latterell reported symptoms of bud-blight of soybeans caused by the tobacco- and tomato-ringspot viruses. This is believed to be the first record of the tomato ring spot virus as an agent of bud blight in soybean (Phytopath. 45: 500).

MEDICAGO SATIVA. ALFALFA: Colletotrichum trifolii, anthracnose. D. C. Erwin, reporting important diseases of alfalfa in southern California, stated that anthracnose on stems and crowns of alfalfa was found for the first time in three southern California counties (PDR 40: 380).

TRIFOLIUM SPP. CLOVER: C. M. Leach reported that an improved method for the isolation of pathogens from clover and other small-seeded legumes had been devised at the Oregon Agricultural Experiment Station (Phytopath. 45: 94).

TRIFOLIUM PRATENSE. RED CLOVER: According to J. W. Gerdemann Polymyxa graminis was found in 1955 in red clover roots collected from a field on the Agronomy South Farm at Urbana, Illinois. The abundance of spore clusters indicated that the fungus may cause injury to the roots under certain conditions (PDR 39: 859).

TRIFOLIUM PRATENSE. RED CLOVER: In Kentucky, symptom reaction of individual red clover plants to yellow bean mosaic virus was reported by S. Diachun and L. Henson (Phytopath. 46: 150).

TRIFOLIUM REPENS var. LADINO. LADINO CLOVER: A comparison of results from greenhouse and field inoculations of Ladino clover with Sclerotinia trifoliorum was reported by A. A. Hanson and J. H. Graham in Pennsylvania (Agron. Jour. 47: 280).

DISEASES OF FRUIT CROPS

J. O. Andes reported estimated loss from plant diseases of major importance in Tennessee in 1955 (PDR 40: 162).

K. G. Parker and W. F. Mai reported that the root lesion nematode, Pratylenchus penetrans, apparently is a major factor in failure of tree fruits on light soils in western New York. Sour cherry was most severely affected but there was evidence of substantial damage to apple trees and moderate damage to peach trees. The nematode occurred in association with other tree fruits also. Some other nematodes were found in orchard soils, including Xiphinema sp., Criconemoides sp., and Paratylenchus sp. (PDR 40: 694).

CITRUS Spp. CITRUS: A stable inexpensive wax emulsion for waxing citrus fruits, referred to as 101A, is fungicidal. It contains Dowicide A and hexamine. In Florida, Valencia oranges picked in April and May, treated and stored at 70°F showed 78, 76, and 42 percent reduction in decay after 1, 2, and 3 weeks, respectively. The emulsion is also satisfactory on grapefruit and is particularly suitable for the more tender citrus varieties such as Temple oranges and tangerines (Proc. Amer. Soc. Hort. Sci. 66: 164).

T. A. DeWolfe and others reported that two nematode-capturing fungi, Arthrobotrys oligospora and A. dactyloides, were found in a shavings mulch applied experimentally in a citrus grove in California. Among the nematodes devoured was the citrus nematode, Tylenchulus semipenetrans (Calif. Citrogr. 39: 104).

Wray Birchfield and F. Bistline reported studies on the probable effect of different cover crops on the recurrence of the burrowing nematode (Radopholus similis) in citrus spreading decline control areas in Florida (PDR 40: 398).

Phytophthora parasitica, brown rot. It is not known whether the recent important occurrence in Florida of brown rot of citrus fruit on the tree is associated with weather or with the possible introduction of fruit-infecting strains of P. parasitica (L. C. Knorr, PDR 40: 772).

Viruses.

Tristeza. J. B. Carpenter reported identification of tristeza in Meyer lemon in Arizona. The survey was begun in October 1955 (PDR 40: 701).

J. M. Wallace and others discussed the origin and spread of citrus viruses, especially tristeza. Attention was given to the need for international exchange of plant material, the dangers of distributing viruses in such material, and ways of lessening these dangers.

A bud union abnormality possibly caused by a virus or virus complex was reported by G. R. Grimm and others to be very common in Florida on rough lemon rootstocks with sweet orange scions, being particularly severe during the dry months of March to May. The symptoms resembled those of cachexia disease (PDR 39: 810).

Transmission experiments and xyloporosis-cachexia relations in Florida were reported by J. F. L. Childs. The effect on citrus budwood certification programs of the possibility of transmission of the xyloporosis virus through seed of sweet lime was stressed by the author (PDR 40: 143).

ERIOBOTRYA JAPONICA. LOQUAT: In Alabama, experimental results reported by R. L. Self and H. S. Ward Jr. showed that one-sided growth of loquat seedlings in cans results from high soil temperatures on the side exposed to the sun (PDR 40: 957).

FICUS CARICA. FIG: At the Citrus Experiment Station, Riverside, California, fig mosaic virus was found to be transmitted by the eriophyid mite, Aceria ficus, according to Flock and Wallace (Phytopath. 45: 52).

FRAGARIA Spp. STRAWBERRY: Dormancy is a factor in the tolerance of strawberry plants to hot-water treatment, according to A. C. Goheen and others (PDR 40: 446).

Edward K. Vaughan and others described the Oregon strawberry plant propagation center (PDR 40: 322).

Botrytis cinerea, gray mold, In greenhouse trials thiram and dichlone gave good control of gray mold of strawberries for 18 days after spraying. Thioneb, Mesulfane and Norsulfane at the higher concentration gave good control for 10 days. Captan gave moderate control for 10 days. Three other chemicals tried proved unsatisfactory (Stoddard and Miller, PDR 40: 443).

Nematodes. In Louisiana the occurrence and pathogenicity of nematodes in commercial strawberry areas, and effects of soil fumigation on nematode populations and on fruit yields were investigated (N. L. Horn and others, PDR 40: 790).

A. C. Goheen and A. J. Braun furnished data indicating that many nematodes that can parasitize wild strawberry plants are widely distributed in wooded areas in Maryland. Because these woodland areas are located in regions where cultivated crops may have been grown a century or two earlier and also because nematodes may have been carried by water or by animals from nearby cultivated land, it was not possible to state definitely that these nematodes are indigenous. However, since meadow (Pratylenchus penetrans), ring (Criconemoides sp.), dagger (Xiphinema sp.), and spiral (Helicotylenchus nannus) nematodes were found in four to seven of the 12 wooded areas investigated, circumstantial evidence suggested that these four nematodes at least are indigenous in Maryland (PDR 40: 43).

Richard A. Chapman recorded the plant parasitic nematodes associated with strawberries in Kentucky. During September and October 1955, 50 strawberry fields in 18 counties were systemically sampled to determine the nematode populations associated with this crop (PDR 40: 179).

Root-knot nematode. The effectiveness and mode of use of Nemagon for the control of Meloidogyne hapla was outlined by H. S. Potter and O. D. Morgan (PDR 40: 187). John S. Bailey reported observations suggesting that root-knot nematodes in strawberry roots do not persist in Massachusetts (PDR 40: 44).

Pratylenchus penetrans, meadow nematode, can enter strawberry roots directly and feed and reproduce itself therein, thus proving that it is a primary parasite of strawberry. Inoculations with large numbers of this nematode produced marked stunting of the plants. Plants set in soil infested with this nematode did not survive and grow so well as plants set in nematode-free soil. The roots of plants from nematode-infested soil were badly rotted and showed typical black root rot symptoms, whereas those from nematode-free soil were almost free of rot (A. C. Goheen and J. B. Smith, PDR 40: 146). Observations reported by D. J. Raski indicated that Pratylenchus penetrans is only one of the factors associated with black root rot in the California strawberry planting studied (PDR 40: 690).

In California, Stephen Wilhelm reported Verticillium wilt (Verticillium albo-atrum of strawberry with special reference to resistance (Phytopath. 45: 387).

Black root rot. Vapam and ethylene dibromide plus Terrachlor, treatments having both nematocidal and fungicidal properties, gave better control of black root rot of strawberries than either nematocides or fungicides used alone. Control by either type of treatment alone was only intermediate as compared to that given by a combination treatment (Patrick M. Miller, PDR 40: 45).

Viruses.

The symptoms produced in Fragaria vesca by a combination of strawberry viruses was discussed by John R. McGrew (PDR 40: 173).

In New Hampshire, during the 1954 and 1955 growing season a comparison was made between virus-free and locally grown commercial strawberry plants with reference to plant production and fruit yield. The average numbers of runner plants produced per mother plant in 1954 for the virus-free Catskill, Premier, and Sparkle were 89, 160, and 95, respectively, and for the commercial plants 39, 93, and 81. Yield data were taken in 1955. The average yields per clone for the virus-free Catskill, Premier, and Sparkle were 10.6, 13.5, and 10.9 quarts, respectively, as compared to 3.9, 8.0 and 7.2 quarts for the locally grown commercial plants. The greater fruit yield of the virus-free clones of each variety seemed to be due to a larger number of plants produced in these clones than to more or larger berries per plant (R. F. Becker and A. E. Rich, PDR 40: 947).

MALUS SYLVESTRIS. APPLE: Captan and zineb in combination was the most satisfactory general purpose spray for the control of apple diseases, in Delaware tests reported by J. W. Heuberger and others (PDR 40: 467).

J. C. Dunegan and R. W. Wilson reported evidence indicating downward diffusion of streptomycin in apple and pear tissues (PDR 40: 478).

Botryosphaeria ribis, canker and fruit rot, has been found in New York according to G. D. Lewis. Observations on varietal susceptibiltiy in southern New York were discussed. The progress of decay in Red Delicious fruits was described (PDR 40: 228).

Erwinia amylovora, fireblight. Hemphill and Goodman reported experiments at the University of Missouri to determine the effects of plant growth-regulating substances on control of E. amylovora by streptomycin and Terramycin. The results indicated that the improved control was not a direct effect of growth-regulating substances on the pathogen but of some host reaction (Science 122 (3159): 122). In Missouri, R. N. Goodman discussed late season twig-infection as a factor limiting effectiveness of antibiotics for fireblight control (PDR 39: 922).

Physalospora obtusa, black rot and leaf spot. At North Carolina State College, J. F. Fulkerson studied the relation of light to the production of pycnidia by P. obtusa. (Phytopath. 45: 22) Apple black rot in Georgia and its control was reported by J. Taylor. The results of inoculation experiments demonstrated the importance of maturity; April infections will not cause severe fruit rot until 4 to 8 weeks before harvest, whereas inoculated ripe fruit will be completely decayed in 3 to 5 days (Phytopath. 45: 392).

Roderick Sprague reported the compatibility of sodium pentaborate, which is applied in spray form to correct boron deficiency, with sprays used for apple powdery mildew (Podosphaera leucotricha) control. (PDR 39: 820).

Dapple apple is a descriptive name for a fruit symptom observed in one New Hampshire orchard, cause unknown but possibly virus (W. W. Smith and others, PDR 40: 765).

Scarskin, a disorder of the fruit of the Red Delicious variety of apple, has been noted in commercial orchards in northern Missouri. A corky condition in the periderm tissue so defaces the fruit as to make the crop unmarketable. The trouble appears to be restricted to the Delicious variety and was limited to a few trees. (D. F. Millikan and W. R. Martin, Jr. PDR 40: 229).

PERSEA AMERICANA. AVOCADO: In California, Zentmyer and Bingham reported the influence of nitrite on the development of Phytophthora root rot of avocado (Phytopath. 46: 121).

A necrotic injury to avocado leaves in California, hitherto attributed to insect damage, is apparently the result of an as yet undetermined physiological disorder. The damage is less serious than that caused by insects, but is more widely distributed throughout southern California and usually more abundant. The disease may destroy 25 to 50 percent of the surface of leaves in the interior of the tree (W. Ebeling, Calif. Agri. 9(8): 9, 1955).

PRUNUS spp. A Cytospora sp. causing canker on Italian prunes was observed for the first time in Idaho in 1951. Similar cankers were also found on sweet cherry. In recent orchard surveys the fungus was observed on cherries, peaches, apricots, apples, and willows, indicating that it is serious and wide-spread in most of the southwestern part of the State (A. W. Helton and J. A. Moisey, PDR 39: 931).

Xanthomonas pruni, bacterial spot. R. N. Goodman and P. Shepard obtained promising results from tests with streptomycin preparations against bacterial spot (PDR 40: 93).

PRUNUS spp. CHERRY: Of materials tested in New York a combination of Acti-dione and sulfur gave outstanding control of both powdery mildew (Podosphaera oxyacanthae) and leaf spot (Coccomyces hiemalis) on cherry nursery stock. Copper fungicides gave good control of leaf spot alone. Other fungicides tested were not so satisfactory (R. M. Gilmer, PDR 39: 762). Gilmer also reported data demonstrating that necrotic ring spot virus, or a virus capable of causing symptoms in cucumber plants indistinguishable from those caused by necrotic ring spot virus, occurs in Europe and may be imported into the United States in mahaleb seeds (PDR 39: 727).

PRUNUS PERSICA. PEACH: Daniel H. Cohoon and R. H. Daines reported nodal cankers on peach trees produced by Fusicoccum amygdali, appearing throughout the year with the greatest number occurring in the spring and fall. Inoculation experiments showed that twig infections occur at bud scales, stipules, fruit and leaf scars, and at the blossoms. Temperature studies indicated that resistance to leaf scar infections developed more rapidly at 80° F than at lower temperatures (PDR 40: 304).

Nemagon at certain concentrations gave satisfactory control of peach root knot (Meloidogyne spp.) in South Carolina, according to H. H. Foster and L. W. Baxter (PDR 40: 400).

Xanthomonas pruni, bacterial spot, has not yet been adequately controlled by the use of chemical sprays. According to R. H. Daines captan has become the standard New Jersey remedy in combating this disease but it also leaves much to be desired. Antibiotics as foliage sprays have shown little promise of effective control of bacterial spot (PDR 40: 335).

N. S. Wilson and others reported an apparently undescribed species of Eriophyes to be a vector of peach mosaic virus. Near Riverside, California, it was found on infected peach trees beneath the closely adhering bud scales, and on plums (five species) also on rudimentary leaves of new growth. The virus was transmitted by the mite from peach and plum to peach seedlings in the greenhouse. The same species of Eriophyes was later collected from mosaic-infected orchards in western Colorado, Arizona, and New Mexico (PDR 39: 889).

Boron deficiency. A. C. McClung and C. N. Clayton described a disorder of peach trees in the Sandhills area of North Carolina. Evidence indicated that boron deficiency was responsible but definite proof was difficult to obtain (PDR 40: 542).

PRUNUS VIRGINIANA. CHOKECHERRY: Chokeberry, which grows abundantly in canyons and on the foothills of the mountainous regions of the Western States is an important source of X-disease virus, transmitted by the leafhopper Colladonus geminatus. The trees can be eradicated by the use of foliage sprays containing low volatile esters of 2,4-D, or mixtures of 2,4-D and 2,4,5-T at a concentration of 2,000 p.p.m. by weight in water. Treatments each year at the full blossom and leaf stage in early June usually suffice to kill 90 percent of the trees within two years (W. O. Lee and F. L. Timmons. Down to Earth 11 (4), 1956).

RUBUS SPP. BLACKBERRY: Agrobacterium rubi, cane gall. At the Oregon State College E. K. Vaughan reported three unusual manifestations of cane gall on cultivated blackberry (Phytopath. 45: 56).

RUBUS SPP. RASPBERRY: E. K. Vaughan and H. W. Wiedman reported that at the Oregon Agricultural Experiment Station, a ring spot virus was transmitted by grafting from red raspberry to a clone of Fragaria vesca. To the authors' knowledge this is the first report of the transmission of a virus from raspberry to strawberry (PDR 39: 542).

VACCINIUM SPP. BLUEBERRY: K. Maramorosch reported the transmission of the blueberry-stunt virus by Scaphytopius magdalensis in New York. Similar observations were made in New Jersey (Journ. Econ. Ent. 48: 1-8).

VITIS SPP. GRAPE: F. N. Harmon and J. H. Weinberger discussed foliage burn and other symptoms of the white-Emperor virus disease of grapes in California (PDR 40: 300).

DISEASES OF NUT CROPS

CARYA ILLINOENSIS. PECAN: Cladosporium effusum, scab, has long been recognized as one of the factors limiting pecan production. It has been reported from Mississippi on Stuart, up to now considered the most resistant variety, according to John R. Cole and A. C. Gossard (PDR 40: 156).

JUGLANS REGIA. PERSIAN WALNUT (ENGLISH WALNUT): Hendersonula toruloidea, branch wilt, according to J. H. Foott and others, has become particularly destructive in Tulare County, California. It may be reduced by annual removal of diseased branches, by the use of nitrogenous fertilizer, and by irrigation during the growing season (Calif. Agri. 9 (10): 11. Sunburn predisposes walnut trees to branch wilt in California, according to N. F. Sommer (Phytopath. 45: 607).

Xanthomonas juglandis, bacterial blight. Agrimycin 100 was as effective as copper compounds for the control of walnut blight in Oregon, and was not injurious, according to P. W. Miller (PDR 40: 626).

DISEASES OF ORNAMENTAL AND MISCELLANEOUS PLANTS

CAMELLIA SPP. CAMELLIA: Sclerotinia camelliae, flower blight. According to C. A. Hanson all species and varieties of camellias have been found to be equally susceptible to flower blight. During the spring of 1955 applications of captan as soil drenches in nurseries in southern California reduced incidence by as much as 90 percent. Fortnightly sprays during the flowering period, or more frequently after rain, gave best control (Camellian 6 (3): 5, 29).

CANNA GENERALIS. CANNA: Canna-mosaic virus has been transmitted to canna, corn, and bean by means of juice and by means of the aphids, Aphis gossypii, Aphis maidis, and Myzus persicae in California according to B. S. Castillo and others (PDR 40: 169).

CASTILLEJA AUSTROMONTANA. INDIAN PAINTBRUSH: Cronartium filamentosum, ponderosa pine rust. F. G. Hawksworth pointed out that the possibility of heteroecism of this important rust has not been confirmed in existing literature. Preliminary inoculation tests showed that this one species of Indian paintbrush is susceptible to the rust (PDR 40: 581).

CHRYSANTHEMUM spp. CHRYSANTHEMUM: Relations between temperature and the geographical distribution of chrysanthemum rust (Puccinia chrysanthemi) were studied at Ithaca, New York by Campbell and Dimock. Results explained the limitation of severe damage in North America to generally cool areas. (Phytopath. 45: 644).

Philip Brierley reported Blazing Gold as a test variety for the chrysanthemum flower-distortion virus. Introduction of the virus from Europe is believed to have been quite recent, but since it occurs in American rather than imported varieties a vector must be present in the United States (PDR 39: 899). Brierley also reported symptoms induced in chrysanthemums inoculated with the viruses of mosaics, aspermy, and flower distortion (Phytopath. 45: 2).

EUPHORBIA PULCHERRIMA. POINSETTIA: Thielaviopsis basicola, root rot. In Maryland, John R. Keller and James B. Shanks stated that there are two phases of root rot in greenhouse-grown poinsettias. The first appears when cuttings are rooted and is caused chiefly by species of Rhizoctonia and Pythium. The second appears as a late season rot just before the plants mature. In older plants, T. basicola is the primary pathogen, but root injury is increased by the simultaneous presence of Rhizoctonia and Pythium (Phytopath. 45: 552).

GLADIOLUS SPP. GLADIOLUS: Meloidogyne spp., nematodes. According to J.C. Wells and N. N. Winstead nematode diseases are considered to be one of the major disease problems in southeastern North Carolina where gladiolus is an important floral crop. The reaction of 20 of the most widely grown varieties to five species of Meloidogyne was determined under greenhouse conditions (PDR 40: 177).

PRUNUS SERRULATA. FLOWERING CHERRY: Little cherry (virus). In Oregon and Washington, buds from certain symptomless Kwanzan and Shiro-fugen flowering cherry source trees used as virus test plants produced fruit symptoms on Lambert and Bing cherry trees resembling those of little cherry, according to E. L. Reeves and others (PDR 39:725).

RHODODENDRON spp. AZALEA: Ovulinia azaleae, petal blight, appeared in California in 1940. It has spread and is now causing concern, according to Raabe and Sciaroni. Cool rainy weather favors the disease. Control is difficult and rendered more so by the rapid succession of bloom. Spraying three times a week during the cooler part of the day with Parzate or Dithane Z-78 is recommended. Infected flowers should be destroyed. Ground sprays of Fermate before flowering destroy the ascospores; so does mulching; another precaution is not to splash when watering. Entry of the fungus into a planting can be prevented by ensuring that new plants are flowerless and bare-rooted (Calif. Agri. 9 (10): 7, 14).

DISEASES OF SHRUBS AND TREES

A. W. Engelhard and J. C. Carter summarized records of Verticillium albo-atrum on woody hosts in Illinois 1945-1955 (PDR 40: 459).

BETULA LUTEA. YELLOW BIRCH: R. P. True and others reported Poria laevigata and P. obliqua as causing serious decay of yellow birch in the Monongahela National Forest of West Virginia. P. laevigata produces bark-covered cankers associated with extensive white rot which renders the timber unmerchantable. P. obliqua, also causing white rot, produces sterile, perennial, clinker-like conks on branch stubs, seams, or wounds on the trunks of affected trees (Forestry Jour. 53: 412).

LIQUIDAMBAR STYRACIFLUA. SWEETGUM: G. Y. Young reported observations on the progress of sweetgum blight (cause unknown) in Maryland plots in 1955 (PDR 40: 249).

LIRIODENDRON TULIPIFERA. YELLOW-POPLAR: Verticillium albo-atrum, wilt. Alma M. Waterman reported that a few years ago in Milford, Connecticut, a yellow-poplar lawn tree was reported by the owner to be gradually wilting and dying. An examination in September showed about ten affected branches scattered through a 20-foot tree. From greenish streaks in the wood of these branches, Verticillium was isolated (PDR 40: 349).

PICEA ENGELMANNII. ENGELMANN SPRUCE: R. W. Davidson reported that in his work at the Rocky Mountain Forest and Range Experiment Station, in Colorado, four species of the Ophiostomataceae were found to be associated with the bark beetle Dendroctonus engelmanni in bark of dying Engelmann spruce. Leptographium engelmanni, which causes a light gray stain in the sapwood, was found in every tree examined and known to have been killed by the insect. Ophiostoma truncicola was found in the main galleries of the beetles. Endoconidiophora coerulescens was occasionally present in the galleries and was also found on the sapwood of logs cut from beetle-infested trees. O. bicolor was isolated once from an adult D. engelmanni beetle, but was also obtained from other sources in Canada. L. engelmanni, O. truncicola, and O. bicolor are described as new species. (Mycologia 47: 58).

PINUS SPP. PINE: A. A. Foster reported diseases occurring in forest nurseries in Georgia. The rapid expansion of the pulp and paper industry in the Southeast has placed new emphasis on the production of pine seedlings. The Georgia Forestry Commission produces and distributes 115 million seedlings annually. Control of diseases is an important factor in keeping the cost of production near the $3.00 per thousand selling price (PDR 40: 69).

Arceuthobium spp., dwarf mistletoe. Frank G. Hawksworth reported that lodgepole pine (Pinus contorta) and ponderosa pine (P. ponderosa var. scopulorum) are each attacked by a distinct species of dwarf mistletoe in the central Rocky Mountains. A. americanum occurs on lodgepole pine; A. vaginatum f. cryptopodum on ponderosa pine. This Colorado report recorded observations on natural crossovers of dwarf mistletoe from ponderosa pine to lodgepole pine and vice versa in stands where the two pines intermixed. This is apparently the first report of A. vaginatum f cryptopodum on lodgepole pine (PDR 40: 252).

PINUS MONTICOLA. WESTERN WHITE PINE: Lesions associated with pole blight (cause unknown) of western white pine in northern Idaho were reported by C. D. Leaphart and L. S. Gill (For. Sci. 1: 232).

PINUS STROBUS. WHITE PINE: Alma M. Waterman reported a stain technique devised at the Forest Insect and Disease Laboratory, New Haven, Connecticut, for detecting blister rust (Cronartium ribicola) in cankers on white pine in the eastern United States (For. Sci. 1: 219).

POPULUS TREMULOIDES. ASPEN: Hypoxylon pruinatum, canker. In June 1955, during decay studies in aspen on the Routt National Forest, north of Hayden, Colorado, Hypoxylon cankers were observed for the first time by Ross W. Davidson and Thomas E. Hinds. Hypoxylon cankers were also observed in southwestern Colorado. (PDR 40: 157).

PROSOPIS JULIFLORA. MESQUITE: Ganoderma zonatum has been found associated with dead and dying mesquite in Texas. In greenhouse experiments inoculation of mesquite seedlings growing in unsterilized soil did not reproduce the disease in any instance, but when sterilized soil was used-100 percent killing resulted. (D. C. Norton and Richard Behrens, PDR 40: 253).

QUERCUS SPP. OAK. Endoconidiophora fagacearum, oak wilt. In West Virginia, R. P. True and W. H. Gillespie reported on the effectiveness of deep dry girdling of oaks for the suppression of oak-wilt mat formation and the prevention of the overland spread of oak wilt (PDR 40: 245). Isolations from borings made in standing oak trees killed by wilt in Missouri indicated that by the time mycelial mats are produced the fungus may have invaded any part of the sapwood (T. W. Jones and T. W. Bretz PDR 39: 872). A. W. Engelhard discussed results obtained from inoculation of oak trees with the oak wilt fungus at different times of the year and with different types of inoculum (PDR 40: 1010).

During investigations at the Iowa Agricultural Experiment Station on the dissemination of the oak wilt fungus, 442 fungal isolates (41 genera) were obtained by swabbing the beaks and throats of 306 birds from affected areas. The oak wilt fungus was not among them (Iowa Coll. Jour. Sci. 29: 659). Experimental transmission of the oak wilt fungus by caged squirrels was reported by Himelick and Curl (Phytopath. 45: 581).

According to W. J. Stambaugh et al. the bark and wood-boring beetles, Agrilus bilineatus, Xyleborus spp., Xyleterinus politus, and Pseudopityophthorus spp., were found to carry viable spores from diseased tree parts. These insects have not been observed to feed on mycelial mats and presumably obtain inoculum from the sapwood. This finding may explain cases recently observed in Pennsylvania of the spread of the disease 50 to 150 feet beyond the nearest known infected tree (PDR 39: 867). E. A. Curl reported that the results of greenhouse tests showed that spring tails (Collembola) can carry spores of E. fagacearum on their bodies from a source of conidia or a source of conidia plus ascospores to wounds on healthy oak seedlings, resulting in infection and death of the trees. The results obtained here, along with facts relating to the life cycle of the Collembola, indicate that these insects may be potential vectors of the oak wilt fungus (PDR 40: 455). Experimental evidence that the small oak barkbeetle (Pseudopityophthorous minutissimus) can carry the oak wilt fungus (Endoconidiophora fagacearum) was reported by W. D. Buchanan in Missouri (PDR 40: 654).

Since August 1955, 300 new infection spots of wilt have been located in West Virginia, four of which constitute the first known records in Marion, Harrison, Fayette, and Calhoun Counties. A partial survey of the State in 1954 revealed a total of only 145 individual trees with oak wilt. The underground spread through natural root grafts was more frequent than previously observed and caused greater loss at individual sites in some northeastern counties than in other parts of the State (R. P. True and W. H. Gillespie PDR 39: 783).

Polyporus hispidus. In Mississippi, from the Delta Experimental Forest at Stoneville, E. R. Toole reported on the occurrence of trunk cankers and localized decay caused by P. hispidus on Q. phellos, Q. nigra, Q. nuttallii, and Q. falcata var. pagodaefolia (Phytopath. 45: 177).

ULMUS spp. ELM: Francis W. Holmes recorded Dutch elm disease (Graphium ulmi) distribution in North America as of 1955 (PDR 40: 351).

DISEASES OF SPECIAL CROPS

J. O. Andes reported estimated loss from plant diseases of major importance in Tennessee in 1955 (PDR 40: 162).

AGARICUS CAMPESTRIS. MUSHROOM: Dactylium dendroides, mildew. B. B. Stoller and others reported results with various chemicals tested for the control of Dactylium mildew of cultivated mushrooms in California. Experiments with Terraclor have shown that this fungicide can eradicate mildew even often it is well established on the beds and, also, that it has a relatively long residual effect (PDR 40: 193).

At the Plant Industry Station, Beltsville, Maryland, T. T. Ayers and E. B. Lambert reported that the use of chlorinated water for wetting mushroom beds throughout the cropping season caused no yield reduction and effectively controlled bacterial blotch (Pseudomonas tolaasi), Verticillium sp., and Mycogone perniciosa. It also prevented the development of bacterial soft rot of the pinheads (PDR 39: 829).

ALOË VARIEGATA. ALOE: Pythium root rot (P. ultimum) of Aloë variegata in California was controlled by the hot-water treatment, according to K. F. Baker and R. D. Durbin (Cactus & Succ. Jour. Los Angeles, 28(2): 45-46 Mar.-Apr. 1956).

ARACHIS HYPOGAEA. PEANUT: D. C. Norton and others reported a study of fungi associated with blemished Spanish peanuts in Texas. Aspergillus flavus, Alternaria spp., and Fusarium spp. were the most common fungi isolated (PDR 40: 374).

Weed control studies in peanut fields in 1954, according to Chappell and Miller, indicated that peanut plants in herbicide-treated areas were often larger and grew more vigorously than those in untreated areas. Studies in the laboratory in the summer of 1954 showed that certain herbicides were effective against several parasitic fungi and the sting nematode (Belonolaimus gracilis). Disease intensity in the field associated with herbicide-treated peanuts in 1955 was measured and recorded. Whether the herbicides actually act as fungicides and nematocides under field conditions was not definitely established, but evidence was presented that their usage may influence disease development in peanuts (PDR 40: 52).

BETA VULGARIS. SUGAR BEET: Fink and Buchholtz reported the correlation between sugar beet crop losses and greenhouse determinations of soil infestation by Aphanomyces cochlioides. The results showed that the degree of soil infestation in a particular field can be determined prior to planting and this may prove to be an insurance against subsequent crop failure (Proc. Amer. Soc. Sug. Beet Tech. 8: 252).

Cylindrocladium scoparium, a weak pathogen on various plants, was identified at Beltsville, Maryland as the pathogen responsible for the scurf of sugar beets, first observed at Arlington Farm, Virginia, in 1935 and again at Blissfield, Michigan, in 1947, in which the root crown became brown and cracked and the petioles withered. Culture studies and inoculation experiments showed the fungus to be a weak pathogen on sugar beet. (P. L. Lentz, PDR 39: 654).

At the Nebraska Agricultural Experiment Station J. Dunleavy reported on the control of damping-off (Rhizoctonia sp.) of sugar beet by Bacillus subtilis. Inhibition of the fungus by the bacterium was promoted by low and retarded by high temperatures, and the amount of manure in the soil determined the extent of the process. The addition of a high-nitrogen nutrient solution to a non-sterile soil improved the control of damping-off (Phytopath. 45: 252).

Virus yellows. C. W. Bennett and others reported the effect of virus yellows on yield and sucrose content of sugar beet in tests at Riverside, California (Proc. Amer. Soc. Sug. Beet Tech. 8: 236).

CARTHAMUS TINCTORIUS. SAFFLOWER: Puccinia carthami, rust. In inoculation experiments conducted at Beltsville, Maryland, the rust-resistant safflower variety W. O. 14 and other resistant selections were susceptible to race 2 of the rust, a new race first observed in 1954 in one field in California. In 1955 many of the lines resistant to the common race were affected by the rust, indicating that the new race may cause serious damage (C. A. Thomas, PDR 39: 652).

GOSSYPIUM spp. COTTON: The Committee on Cotton Disease Losses reported reduction in yield of cotton caused by diseases in 1955 (PDR 40: 153).

Stem intumescences resulting from flooding of cotton plants apparently are due to abnormal stem metabolism induced by the surrounding water, according to Wayne J. McIlrath (PDR 40: 65).

D. N. Fulton and others reported that temperature during seedling growth has been shown to have a significant influence on the species of fungi isolated from diseased cotton seedlings (PDR 40: 556). C. D. Ranney described and illustrated the construction of a constant temperature tank battery for cotton seedling disease investigations (PDR 40: 559).

Viability of cotton seed and infection by anthracnose (Colletotrichum gossypii) in South Carolina in the two contrasting years 1954 and 1955 was related to amount and frequency of rainfall at boll opening, according to investigations reported by C. H. Arndt (PDR 40: 1001).

Eugene E. Staffeldt and Paul A. Fryxell described a method of estimating reaction of cotton varieties and selections to Verticillium wilt (PDR 39: 690).

Xanthomonas malvacearum, bacterial blight, occurs throughout the cotton-growing areas of the world. In the United States, the estimated reduction in 1955 cotton yield caused by this disease was 222, 611 bales, or 1.08 percent loss. Losses from the disease are greatest in the Southwest. Bacterial blight resistant varieties and strains of cotton are listed, with descriptions and seed sources (D. M. Simpson PDR 40: 549).

HIBISCUS CANNABINUS. KENAF: Certain lines of kenaf exposed to infection by the anthracnose fungus Colletotrichum hibisci reacted differently at different temperatures, in experiments reported by Summers and Pate (PDR 39: 650). They also reported the reaction of kenaf breeding materials to different races of the anthracnose fungus (PDR 39: 776).

NICOTIANA spp. TOBACCO: During a 1955 survey in Maryland 25 genera of known or suspected plant-parasitic nematodes were found on corn, tobacco, and soybean, according to W. R. Jenkins and others (PDR 40: 37).

Peronospora tabacina, blue mold. According to reports to the Plant Disease Warning Service, blue mold occurred in Georgia plant beds in Cook County, and in Florida, South Carolina, North Carolina, Virginia, Pennsylvania, Connecticut, and Massachusetts. In North Carolina the disease was scattered throughout the Border and Eastern belts with only one report in the season from the Burley area. Blue mold in the field in this State was reported from 9 counties. Shortage of plants occurred in some places owing to one or more reasons, including the neglect of spraying or dusting, carelessness in thoroughness and regularity of application of fungicides, and the severe freeze in the southern area at the end of March which came after a period of unusually warm weather.

In cooperative studies by the Agricultural Research Service and the University of North Carolina sessile sporangia produced on oospores of the blue mold fungus used for inoculum were identified as a species of Phlyctochytrium. The fact that this and other chytrids may attack the oospores and prevent their germination could partly explain the occurrence of only scattered foci of infection in the plant bed (L. H. Person and others. PDR 39: 887).

Phytophthora parasitica var. nicotianae, black shank. W. Lautz summarized a 5-year study of soil treatments with nine chemicals for control of black shank. Some chemicals gave control in some years but not in others (PDR 40: 855). J. N. Sasser and others reported the relationship of root-knot nematodes (Meloidogyne spp.) to black shank (Phytophthora parasitica var. nicotianae) attack as determined in greenhouse tests at the North Carolina Experiment Station. They concluded that control of the nematode either by soil fumigation or crop rotation should be practiced in fields invaded by black shank pending the development of root knot-resistant varieties. (Phytopath. 45: 459).

Pseudomonas tabaci, wildfire. Luther Shaw and George W. Thorne Jr. reported wildfire control studies in burley tobacco plant beds in North Carolina in 1955. Spray treatments with Terramycin and standard copper drench treatments were substantially less effective in wildfire control than the spray and dust formulations with streptomycin tested (PDR 40: 325). H. E. Heggestad and others reported that streptomycin gave more effective control of tobacco wildfire when applied as a spray than as a dust. Tests were conducted at Greenville, Tennessee and Beltsville, Maryland (PDR 40: 48). The value of streptomycin sulfate in the preventative and eradicative control of wildfire of tobacco in Tennessee was summed up by G. N. Rhodes and others (PDR 40: 202).

Pseudomonas solanacearum, bacterial (Granville) wilt. In South Carolina G. B. Lucas and others investigated the relationship of root-knot nematodes to Granville wilt resistance in tobacco. The results of the experiments indicated that root knot should be combated in fields heavily contaminated by P. solanacearum in order to gain maximum benefit from the use of wilt-resistant varieties (Phytopath. 45: 537). The stunt nematode, Tylenchorhynchus claytoni, did not increase severity of bacterial wilt on tobacco in experiments reported by G. B. Lucas and L. R. Krusberg (PDR 40: 150).

Q. L. Holdeman and W. H. Burkholder reported the identity of barn rots (Pythium aphanidermatum and Erwinia aroideae) of flue-cured tobacco in South Carolina. These rots tend to accompany wet weather (Phytopath. 46: 69).

Viruses. Greenhouse studies at the University of California on the physical properties, host range, and symptomatology of two strains of tobacco ring spot virus and one of the lettuce calico virus suggested that the latter is a distinct strain of the tobacco ring spot virus group. Both tobacco ring spot strains were able to protect tobacco against the lettuce virus, but the reverse could not be demonstrated (PDR 39: 803).

In North Dakota, W. G. Hoyman reported that strains of virus X in expressed sap of Nicotiana glutinosa frozen in 1951, and of X and Y in N. glutinosa and X in potato sap frozen in 1954, were still infective when tested on indicator plants in 1955 (Amer. Potato Jour. 32: 390).

Weather fleck. During 1955 weather fleck, a physiological leaf spot disease, occurred with great severity in experimental tobacco plantings at Beltsville, Maryland. Observations suggested that weather fleck results from cellular breakdown conditioned by environmental factors. Variable amounts of weather fleck developed about mid-July. Maryland Medium proved to be the most resistant variety (L. G. Burk and H. E. Heggestad, PDR 40: 424).

SACCHARUM OFFICINARUM. SUGARCANE: The release of two new sugarcane varieties for commercial planting during the autumn of 1955 was jointly announced by the U. S. Department of Agriculture, the Louisiana Experiment Station, and the American Sugarcane League. Both varieties are described as resistant to sugarcane mosaic virus and moderately so to red rot (Glomerella tucumanensis). They are further reported to have responded favorably to heat treatment for the elimination of stunting virus, to which, however, they appear to be more susceptible than the present commercial varieties. (Sugar, N. Y. 50(8): 43, 1955).

SESAMUM INDICUM. SESAME: A bacterial leaf spot complex of sesame in Texas was reported by D. D. Poole and Carl D. Heather as involving a Pseudomonas sp. and a hitherto unreported genus on sesame, Xanthomonas sp. (PDR 40: 236).

DISEASES OF VEGETABLE CROPS

P. J. Leyendecker and R. M. Nakayama's summary of incidence of plant diseases in New Mexico in 1955 included many vegetable diseases (PDR 40: 159).

R. B. Marlatt discussed the relative tolerances of vegetables to streptomycin sulfate as observed in Arizona. (PDR 40: 200).

Host range studies with Meloidogyne hapla were conducted in the field and greenhouse at Newark, Delaware, and reported by Timothy A. Gaskin and H. W. Crittenden (PDR 40:265).

ASPARAGUS OFFICINALIS. ASPARAGUS. A hitherto unreported crown and root rot (Penicillium martensii) of overwintering asparagus plants has become prevalent during the last ten years in the Yakima Valley, Washington. Results of inoculation experiments yielded conclusive evidence that the fungus is a wound parasite, and freezing injury was shown to be a predisposing factor in its occurrence. Control should be based on the hilling of plants in the autumn to prevent damage from this source, roguing of diseased material at transplanting time, and care in the handling of transplants to avoid unnecessary injury. Fungicidal treatment at this period proved ineffective. (Phytopath. 45: 527).

Puccinia asparagi, rust. In Illinois, A. E. Thompson and P. R. Hepler reported that most species of Asparagus inoculated with rust have shown some degree of susceptibility (PDR 40: 133).

BRASSICA OLERACEA var. BOTRYTIS. BROCCOLI, CAULIFLOWER: Peronospora parasitica, downy mildew. J. J. Natti and others discussed reasons for the increased prevalence of downy mildew on broccoli in New York, and reported results of control test. Agrimycin and Spergon SL were the most promising materials for the control of downy mildew (PDR 40: 118).

In West Virginia, Gallegly and Bishop reported pentachloronitrobenzene for control of clubroot (Plasmodiophora brassicae) of broccoli and cauliflower. The treated plants developed excellent fibrous roots with only a few small clubs at the extremities and produced normal yields. The cost of treating one acre with PCNB at the lowest rate in the transplant water was $15 (PDR 39: 914).

BRASSICA OLERACEA var. CAPITATA: CABBAGE: Fusarium oxysporum f. conglutinans, yellows, was first reported in Louisiana in St. Martin Parish in 1948. In October 1953, several diseased cabbage plants were sent to Dr. W. G. Martin at Baton Rouge from Plaquemines Parish (south of New Orleans). In October 1955, diseased cabbage plants were received from St. Martin Parish by Dr. A. G. Plakidas, who identified the disease as cabbage yellows. So far, in Louisiana the disease is known to occur in only the two parishes. (E. C. Tims and R. T. Brown, PDR 40: 905).

In continued studies at the Truck Crops Branch Station, Crystal Springs, Mississippi, on varietal resistance to black rot (Xanthomonas campestris) in cabbage, D. C. Bain reported the disappearance of black rot symptoms in cabbage seedlings (Phytopath. 45: 35).

BRASSICA OLERACEA GEMMIFERA. BRUSSELS SPROUTS: Plasmodiophora brassicae, club root, on Brussels sprouts, which is serious in San Mateo County, California, spread in one planting from a few diseased plants to the whole of a 20-acre planting in two years. Chemicals applied in setting water controlled the soil borne disease. (Calif. Agr. 9 (10): 8).

CAPSICUM FRUTESCENS, PEPPER: In Louisiana, W. J. Martin and others reported fumigation of bell pepper seed beds for controlling damping-off caused by Rhizoctonia solani (PDR 39: 678).

Xanthomonas vesicatoria, bacterial spot. R. S. Cox reported compatibility between streptomycin and copper in the control of bacterial spot of pepper in Florida. (PDR 39: 616).

Later he reported consistent control with streptomycin and/or neutral copper formulations. An additive effect was noted when these materials were used together. Other materials gave no control of bacterial spot but appeared to be compatible with streptomycin (R. S. Cox. PDR 40: 205).

CUCURBITS. CUCUMBER, MELON, SQUASH: Cladosporium cucumerinum, scab. Saul Rich reported that the addition of glycerin improved the chemotherapeutic activity of zineb against cucumber scab (PDR 40: 620).

Foliage inoculation tests in the greenhouse indicated that varieties of Cucumis sativus, Cucumis melo, Cucurbita pepo, and Cucurbita maxima were susceptible to eight isolates of tomato anthracnose-inciting fungi (Colletotrichum spp., Glomerella cingulata), according to Maria E. Pantidou and W. T. Schroeder in New York (PDR 40: 432).

Colletotrichum lagenarium, anthracnose. D. F. Crossan and P. J. Lloyd reported successful infection of cucumber plants in the field by spraying the vines with a spore and mycelial suspension of C. lagenarium. Despite the severe conditions of the test, both maneb and zineb gave excellent control of leaf infection and significent increases in yield of marketable cucumbers over untreated rows. No phytotoxic effect of either material was observed (PDR 40: 63).

Studies reported by M. J. Goode indicated that there are two or more physiologic races of Colletotrichum lagenarium on watermelon in North Carolina (PDR 40: 741).

Erwinia tracheiphila, bacterial wilt. J. D. Wilson and others in South Carolina reported that two foreign cucumber lines showed resistance to bacterial wilt and powdery mildew (Erysiphe cichoracearum) (PDR 40: 437). Results of greenhouse and field tests of various antibiotics for control of cucumber bacterial wilt were reported by L. E. Williams and J. L. Lockwood (PDR 40: 479).

Erysiphe cichoracearum, powdery mildew. T. E. Randall and J. D. Menzies reported the occurrence of the perithecial stage of this species on Cucumis sp. in Washington (PDR 40: 255).

J. H. Owen reported a destructive wilt of cucumbers, attributed to a new form of Fusarium oxysporum in Florida. It caused damping-off of seedlings and a typical vascular wilt of older plants (Phytopath. 45: 435).

Meloidogyne spp., root knot nematodes. According to N. N. Winstead and J. N. Sasser, cucumber varieties were susceptible to four of the five root-knot nematodes, while Cucumis anguria was susceptible only to M. incognita acrita (PDR 40: 272).

Mycosphaerella melonis, gummy stem blight. Incidence of gummy stem blight and other diseases on cucumbers in South Carolina in the 1955 fall season, and control of cucumber diseases achieved with various fungicides from 1946-1955 are reported by W. M. Epps (PDR 40: 439, 441).

Pseudomonas lachrymans, angular leaf spot. P. A. Ark and M. W. Gardner reported that within the last few years angular leaf spot of cucumber was noted in two coastal counties in California. Several growers have experienced considerable loss, affecting mostly the variety National Canner which is grown both for market and for the canneries. The disease occurred in epidemic form in fields in Alameda County planted with California-grown seed and irrigated by overhead sprinkler or by row irrigation where the rows were occasionally flooded (PDR 40: 61). Pyrophyllites, hydrated lime, sulfur, calcium and magnesium carbonates served as excellent dust carriers of streptomycin, releasing it readily when in contact with water. Good control of cucumber angular leaf spot resulted in tests with pyrophyllite- and hydrated lime-streptomycin formulations dusted on both sides of the leaf followed by mechanical inoculation (R. A. Ark and E. M. Wilson. PDR 40: 332). S. P. Doolittle and F. S. Beecher reported the effect of streptomycin formulations on occurrence of angular leaf spot of cucumber (PDR 39: 731).

Pseudoperonospora cubensis, downy mildew. According to reports to the Plant Disease Warning Service, downy mildew of cucurbits was found in Atlantic Coast Seaboard States as far north as New York, and occurred also in Indiana and Kentucky. The westward spread into Kentucky and Indiana was noteworthy. In Kentucky it was the first occurrence on cantaloupe in many years. The epidemic in eastern Indiana was associated with 8 to 10 inches of rain during midsummer. No control measures for downy mildew of cucurbits were discussed in the warning letters this year except that rain in some places prevented adherence to a regular fungicide application schedule. Where extremely hot, dry conditions obtained, no dusting programs were recommended.

Verticillium albo-atrum for the past several years has caused repeated losses to melon growers in the San Joaquin valley of California. The Cassaba and Persian varieties seemed to be the most susceptible varieties of Cucumis melo. Not infrequently almost the entire production of Cassaba has been worthless. The most serious outbreaks of the wilt in melons have been on land cropped repeatedly to melons or previously planted to tomatoes (S. Wilhelm and E. E. Stevenson, PDR 39: 881).

R. S. Cox suggested cold pox as a name for a serious new disease of cucumbers observed in southern Florida. Blister-like, light olivaceous areas appear on the fruit, coalescing and becoming dried and fissured with age. The cause is unknown, but field observations indicated that the trouble is associated with a sequence of variable weather conditions, always including a period of low temperature. The minimum temperature necessary is above freezing. With favorable weather the symptoms disappear, but may recur several times during the growing season (PDR 39: 478).

Viruses. J. B. Sinclair and J. C. Walker reported that tobacco ring spot virus has been found to be widely prevalent in cucumbers in central Wisconsin, frequently occurring together in the same plant with the cucumber mosaic virus, which raises questions as to the effects of interaction between the two viruses (PDR 40: 19).

IPOMOEA BATATAS. SWEETPOTATO: Monilochaetes infuscans, scurf. Investigations in New Jersey showed that scurf of sweetpotato may increase and spread in storage under high relative humidity, 85 to 90 percent, but there was no evidence of development or spread in houses where humidity was kept at 65 to 75 percent. (R. H. Daines, PDR 39: 617).

Internal cork (virus). Results of experiments reported by W. J. Martin at the Louisiana State University confirmed previous findings that the incidence and severity of the internal cork virus lesions in sweetpotato increase rapidly during storage at 70° to 80° F, but to a negligible extent at 50° to 60°. In roots stored at 50° to 60° for 150 to 200 days and then kept at 80° for 14 days there was little or no increase of cork lesions. There should be sufficient time for marketing the sweetpotatoes after removal from cold storage before a severe increase in cork lesions occurs (PDR 39: 619). Insect control reduced incidence of sweetpotato internal cork in experiments in Louisiana reported by E. J. Kantack and W. J. Martin (PDR 40: 410).

LACTUCA SATIVA. LETTUCE: Marssonina panattoniana, anthracnose. According to H. B. Couch and R. G. Grogan anthracnose occurs on commercial and wild lettuce in California during the cool wet months of February and March, but becomes inactive during the warm dry summer months. They studied the disease under California conditions, with particular emphasis on source of primary inoculum and other etiological factors that might influence occurrence, development and spread of the disease. Thirty-eight other species, representing some 35 genera in the Compositae, were tested as possible hosts. Of these only Lactuca spp. and Bellis perennis (English daisy) were found to be susceptible (Phytopath. 45: 375).

Big-vein (virus). Treatment of healthy lettuce seedlings with various chemotherapeutants prior to setting out in a field infested with soil-borne lettuce big-vein virus may be a practical method of reducing losses from big vein, according to Saul Rich (PDR 40: 414).

Mosaic (virus). H. B. Couch and A. H. Gold at the University of California reported rod-shaped particles in lettuce plants of the Bibb and Great Lakes varieties naturally infected by lettuce mosaic virus, and in the floral and vegetative tissues of Zinnia elegans and Tagetes erecta and in local lesions on Gomphrena globosa inoculated with the virus from lettuce (Phytopath. 44: 715).

In brown stele (cause undetermined), reported in Arizona, the stele of the tap-root assumes a brown color. A significantly greater amount of the disease was found in field plots which had received 40 tons of manure per acre than in control plots or in those which received 185 pounds of calcium nitrate per acre (R. B. Marlatt, PDR 39: 827).

Pink rib. R. B. Marlatt and J. K. Stewart described pink rib, cause apparently unknown, of head lettuce in the field and in storage in Arizona. This discoloration has been noticed during the last three years (1953-55) (PDR 40: 742).

LYCOPERSICON ESCULENTUM. TOMATO: In Wisconsin A. O. Paulus and G. S. Pound studied the effect of air temperature on initiation and development of gray leaf spot (Stemphylium solani) and nailhead spot (Alternaria solani) of tomato. Data from a survey during 1952 and 1953, when neither fungus was widespread, indicated that the prevailing temperatures in the State largely or entirely suppress the accumulation of grey leaf spot inoculum, while the incidence and distribution of nail-head spot are apparently restricted by the cultivation of resistant varieties (Phytopath. 45: 168). D. Davis and J. W. Rothrock discussed the practical advantages of the persistent localized systemic activity of griseofulvin in the control of tomato Alternaria blight (PDR 40: 328).

In New York M. E. Pantidou and W. T. Schroeder reported foliage as a source of secondary inoculum for tomato anthracnose (Colletotrichum phomoides). The tests yielded conclusive evidence, which was subsequently confirmed in the field, that diseased foliage provided sufficient inoculum to be of material importance in fruit infection (Phytopath. 45: 338).

D. F. Crossan and P. J. Lloyd reported field plot experiments on the relationship between overhead irrigation and the incidence, severity, and control of certain tomato diseases. Plots receiving 4 inches of water in a 30-day period had a significantly higher incidence of tomato anthracnose (Colletotrichum phomoides) and fruit rot (Rhizoctonia solani), but a significantly lower incidence of blossom-end rot. Maneb and zineb gave significant control of anthracnose under both irrigated and nonirrigated conditions, but maneb was more satisfactory than zineb under irrigation. Both materials appeared to decrease the severity of blossom-end rot in non-irrigated plots, but neither material controlled Rhizoctonia solani (PDR 40: 314).

Corynebacterium michiganense, bacterial canker. T. S. Pine and others, in an intensive study at the University of California on the pathological anatomy of bacterial canker of young tomato plants demonstrated that infection originated in the spiral vessel elements of the primary xylem (Phytopath. 45: 267).

At the University of Wisconsin J. R. Bloom and J. C. Walker studied the effect of nutrient sprays on Fusarium wilt (Fusarium bulbigenum var. lycopersici) of tomato. (Phytopath. 45: 443).

LYCOPERSICUM ESCULENTUM. TOMATO: Bert Lear and I. J. Thomason reported results with various soil fumigants for control of root-knot nematodes (Meloidogyne incognita acrita, M. javanica) affecting fresh fruit and canning tomatoes in California (PDR 40: 981).

Phytophthora capsici, foot rot. Mature tomato plants at Stockton, California were affected by foot rot. In experiments at the University of California the fungus caused a basal stem rot when the mycelium was added to the soil around the stems of young unwounded, potted Bonny Best tomato plants. It was demonstrated that the pathogen could survive for five months in moist soil in the absence of the host (P. D. Critopoulos, Bull. Torrey Bot. Club 82: 168).

Phytophthora infestans, late blight. In a comparison of three methods for the forecasting of late blight of potatoes and tomatoes, R. A. Hyre reported that hypothetical forecasts based on records from six stations in the northeastern States during the period 1949-54 showed that the method employing moving graphs derived from rainfall and temperature data are the most reliable (Amer. Potato Jour. 32: 362). World distribution and present status of tomato late blight was reported by P. R. Miller and M. J. O'Brien. This survey gives, for each country, the known history and a distribution map, with notes on occurrence and spread, damage, control measures and their effectiveness, strains and varietal resistance. A continental bibliography is included. New records for the mid-western and north-central States of America, and for Africa are reported (PDR Suppl. 231, 89 pp., 1955). According to the annual summary of the Plant Disease Warning Service, in 1955 late blight of potato and tomato was reported from many States and from Canada but was nowhere threatening or severe. In some cases where blight was reported on potato, no blight was observed on nearby tomatoes. No blight was found in either the green-wrap or transplant tomato areas of Georgia. On the whole, plants were relatively free from other diseases, which either developed later in the season or were completely absent. This year the total acreage for all diseases rejected for certification was the smallest since 1946. Experimental forecasts were again made with a high degree of accuracy in the North Central States. Experimental forecasts for potato blight were commenced in Aroostook County, Maine, this year, based on analyses of "moving" rainfall and temperature graphs.

Recent developments in the control of the major diseases of unstaked tomatoes grown on the sandy soils of south Florida were reported by J. F. Darby. A fungicidal program was suggested where the major foliage diseases are late blight (Phytophthora infestans), gray mold (Botrytis cinerea), bacterial spot (Xanthomonas vesicatoria), gray leaf spot Stemphylium solani), and ghost spot. (Florida Hort. Soc. Proc. 66: 103).

Sclerotium rolfsii, southern blight, occurred in experimental plots of Marglobe tomatoes located near Mobile, Alabama in July 1955. Only a few plants died, but many diseased fruits were collected from apparently healthy plants (Charles H. Driver, PDR 40: 259).

Xanthomonas vesicatoria, bacterial spot. Control of bacterial spot in tomato fields with streptomycin-Terramycin sprays was reported by R. A. Conover (PDR 39: 611).

In Ohio, the presence of tobacco mosaic virus on tomato seed was reported by C. A. John and C. Sova (Phytopath. 45: 636).

Occurrence of the destructive potato virus Y in tomato and pepper growing areas of southern Florida was correlated with commercial potato growing in the same areas, according to J. N. Simons and others (PDR 40: 531).

PASTINACA SATIVA. PARSNIP: Cercosporella pastinacae is the cause of leaf spot of parsnip, according to E. F. Guba. The names Ramularia pastinacae and Cercospora pastinacina are regarded as synonyms (PDR 39: 747).

PHASEOLUS LIMENSIS. LIMA BEAN: Phytophthora phaseoli, downy mildew. According to reports to the Plant Disease Warning Service, an extremely accurate forecast for the appearance of downy mildew of lima bean in Delaware this year was made by the warning service developed for this disease by R. A. Hyre. Dr. Hyre's prediction was for the appearance of lima bean downy mildew in Delaware beginning approximately September 1. The disease was found in overwintering plots at the University Farm, Newark, on September 2, and statewide surveys on September 7 and 8 showed it to be present in the Smyrna, Bridgeville, Milford, and Milton areas. During the last three weeks of September downy mildew increased considerably in the lower half of the State.

PHASEOLUS VULGARIS. BEAN: V. E. Wilson reported incidence of bean diseases in southern Idaho in 1955 (PDR 40: 312).

Xanthomonas phaseoli, bacterial blight. In New Jersey, R. A. Gray reported that the addition of 1 percent glycerin to streptomycin sprays greatly increased the effectiveness of the antibiotic against bacterial blight of Pinto beans. Increase in effectiveness was correlated with an increase in absorption of streptomycin by the leaves (PDR 39: 567).

J. R. Baggett discussed the inheritance of resistance to certain strains of the bean yellow mosaic virus in the interspecific cross Phaseolus vulgaris x P. coccineus, the runner bean (PDR 40: 702).

PISUM SATIVUM. PEA: D. J. deZeeuw and others reported results of three years' tests of fungicides, insecticides, and combinations of them, for seed treatment of peas and beans in Michigan (PDR 40: 727).

SOLANUM TUBEROSUM. POTATO: Harry C. Fink et al. reported results of 1955 seed piece treatments in Pennsylvania. Stands were usually increased by the treatments. In some cases treatment resulted in more rapid and more vigorous vine growth (PDR 40: 125).

In Connecticut, P. E. Waggoner reported results with streptomycin and other materials used alone and in combination for potato seed treatment (PDR 40: 411).

Erwinia atroseptica, blackleg. Streptomycin preparations gave good control of bacterial decay of potato seed-pieces, but encouraged growth of fungi, according to R. Bonde and J. F. Malcolmson (PDR 40: 615).

Heterodera rostochiensis, golden nematode. J. F. Spears and others reported evidence of persistence of the golden nematode in a field in New York in which potatoes had not been grown for nine years following soil treatment (PDR 40: 632).

Phytophthora infestans, late blight (see also under tomato). Hyre and Bonde reported that a survey of temperature and rainfall data and blight records for Maine covering the last 50 years showed that Hyre's modification of Cook's method for forecasting outbreaks of blight, used in other States, could have been applied with equal success in northern Maine. They stated that forecasting should now be attempted (Amer. Potato Jour. 32: 119). R. V. Akeley reported that the new, late maturing potato Merrimack proved resistant to the common race of late blight (P. infestans), moderately resistant to early blight (Alternaria solani), field immune from virus A, and highly resistant to net necrosis and to ring rot (Corynebacterium sepedonicum). They stated that in New England it should be planted as early in the spring as possible (Amer. Potato Jour. 32: 93). L. E. Heidrick reported important new developments in the breeding of potatoes for resistance to P. infestans, which include the use of wild species of Solanum from Central and South America and studies on physiologic specialization within the fungus and on the nature of resistance in the host (Phytopath. 45: 250). In June 1955 a survey of potato dumps was initiated to determine the incidence of the Kennebec race (1) and other races of P. infestans in diseased tubers in Maine, according to R. E. Webb and R. Bonde. Infected plants from 15 heaps yielded 11 races of the fungus, 10 of the 15 samples being mixtures of two or more races. Race 0 was found alone in only one sample, while races pathogenic to Kennebec were present in 11. In view of these findings the authors recommended adequate spraying for Kennebec and other varieties resistant to or immune from race 0 only (Amer. Potato Journ. 33: 53).

Streptomyces scabies, scab. Experimental potato scab control in Pennsylvania with Vapam and PCNB was discussed by Harry C. Fink (PDR 40: 190). Soil treatment with PCNB (Terraclor) gave good control of potato scab in eastern Virginia, according to T. J. Nugent (PDR 40: 428). Early Gem, a new early maturing potato, is reported to be highly resistant to scab, and may have some resistance to the purple top wilt, but seems susceptible to all other major potato diseases. It can be used in most scab-infested soils if these are properly drained and not too heavy (F. J. Stevenson, and others. Amer. Potato Jour. 32: 79). G.H. Rieman and D. A. Young reported that the University of Wisconsin has released a new variety of potato, Antigo, resistant to scab which is very serious in Wisconsin. The variety is medium-maturing, of average yielding ability, and suited to the muck soils in the State (Amer. Potato Journ. 32: 407).

In Connecticut, Paul E. Waggoner reported variation in pathogenicity of isolates of Verticillium albo-atrum from potato (PDR 40: 429).

Leafroll (virus). In New York at the Rockefeller Institute, K. Maramorosch reported on seedlings of potato as indicator plants for potato leafroll virus. Infective aphids (Myzus persicae) were confined in celluloid cages on seedlings about 3 inches high for one week. The first symptoms, consisting of rolled leaves and stunting, appeared in four days (Amer. Potato Jour. 32: 49). In Maine R. E. Webb, E. S. Schultz and R. V. Akeley reported some variations in symptomatology and transmission of leafroll of potato. (Amer. Potato. Jour. 32: 60).

R. E. Webb described wilting as an atypical primary leafroll symptom in one potato seedling variety (PDR 40: 15).

PLANT DISEASE EPIDEMICS AND IDENTIFICATION SECTION